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Fertility Change and Women's Education

Stalls in Fertility Decline
Sterilization Regret in Sri Lanka
Periodic Abstinence in 12 Countries

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Table of Contents

		Page
Update		2

Articles

Women's Education and Fertility: A Decade of Change in Four Latin American Countries	Mary Beth Weinberger, Cynthia Lloyd and Ann Klimas Blanc	4
Stalls in the Fertility Decline In Costa Rica and South Korea	Murray Gendell	15
Sterilization Regret in Sri Lanka: A Retrospective Study	Dennis Hapugalle, Barbara Janowitz, Sharon Weir, Deborah L. Covington, Lynne Wilkens and Celene Aluvihare	22
Use of Periodic Abstinence And Knowledge of the Fertile Period In 12 Developing Countries	Amy R. Sheon and Cynthia Stanton	29

Special Report

Weighing the Evidence On the Pill and Breast Cancer	Jeanette H. Johnson	35

Digest

Only 11 Percent of Senegalese Women Practice Birth Control	39
AIDS Education Is Found to Improve Condom Use by Prostitutes in Kenya	40
Iran's Rate of Population Growth Is One of World's Highest	41
Paraguay: Few Changes Found in FP Practice or Fertility in Past 10 Years	42
African AIDS Epidemic May Have Only Moderate Impact on Population Growth	43
Cholesterol Levels May Be Altered by Hormones in Some Combined Pills	44
Percentage of Older Citizens Growing Rapidly in Many Developing Countries	45

Books in Review

A Feminist Critique Critiqued	Rebecca Cook and Ann Leonard	47

UPDATE

Botswana Makes Big Progress

Preliminary data from the Demographic and Health Survey conducted in Botswana in 1988 offers evidence that fertility has fallen substantially in the southeastern African nation.[1] For example, the total fertility rate (TFR) found in preliminary analyses was 5.0 lifetime births per woman, which represents a big decline from previously registered TFRs of 7.0 in 1981 and 6.5 in 1984. Although current contraceptive use had risen by only five percentage points among women in a union (from 28 to 33 percent), reliance on modern methods jumped from 19 percent to 32 percent of currently married women. Almost half of women who used a method relied on the pill.

[1] "Survey Report: Botswana," *Population Today*, Apr. 1989, p. 5.

Back to the Drawing Board?

Recent clinical research into a levonorgestrel-releasing intracervical device (ICD)—that is, a hormonal contraceptive device resembling the IUD but designed to rest just inside the woman's cervix rather than inside the uterus—has shown the ICD to be associated with a relatively low two-year pregnancy rate but a fairly high expulsion rate.[1] Almost 200 Finnish women originally had agreed to use the device, and 57 percent were still using it two years later. The cumulative failure rate after two years was 3.5 percent; all seven pregnancies occurred in the first year of use, and six were the result of unnoticed expulsion of the device. Eighteen of the 200 women expelled the device but did not become pregnant, for an expulsion rate of nine percent. Another 30 percent of the women had the devices removed, one-third because of bleeding problems. The investigators comment that most of the expulsions and pregnancies took place in the first six months of use, and that women relying on the device would probably have to make at least one clinic visit during the first six months to have the device checked. They concede, as well, that "further development of the design of the device may be indicated."

[1] K. Ratsula, "Clinical Performance of a Levonorgestrel-Releasing Intracervical Contraceptive Device During the First Two Years of Use," *Contraception*, **39**:187, 1989.

Breastfeeding Trends in the Philippines

The proportion of Philippine mothers who breastfed their newborns dropped slightly between 1973 and 1983, from 89 percent to 84 percent.[1] Although the decrease was seen across most subgroups, it was especially large among Manila residents (nine percentage points), middle-class women (seven points) and women in transition between traditional and modern employment (11 points). On the other hand, a substantial improvement was seen in the prevalence of breastfeeding among the most highly educated women (eight points) and the women in the most modern occupations (11 points). Additionally, because the proportion of women who breastfed for longer than 12 months increased somewhat over the 10-year period, the overall mean duration of breastfeeding remained unchanged.

[1] B. M. Popkin et al., "Breastfeeding Trends in the Philippines, 1973 and 1983," *American Journal of Public Health*, **79**:32, 1989.

Japan Leads World in Assistance

The Japanese have surpassed all other developed nations in their provision of aid to the developing world: Their government's official development assistance budget of 1.4 trillion yen (or more than $11 billion) for 1989 is 25 percent more than the comparable amount of U.S. aid ($8.9 billion).[1] However, the type of aid offered by Japan differs somewhat from that given by other developed countries. For example, while 97 percent of the funds provided by the United States and 99 percent of the aid supplied by Great Britain come in the form of grants, only 62 percent of Japanese support is furnished through grants, with the remainder being provided through high-interest loans. Also, some observers have charged that Japanese development aid is all too often targeted at large, capital-intensive construction projects rather than at low-tech rural health projects, and that many Japanese-funded activities have adversely affected the environment in recipient countries.

[1] H. F. French, "Japan Becomes World's #1 Aid Giver," *World Watch*, Mar.-Apr. 1989, p. 40.

World Strategies Against AIDS

With the number of cases of AIDS and HIV infection climbing steadily throughout the developing world, many organizations are devising novel ways of reaching men and women at risk of infection.[1] For example, the Ministry of Health in Zambia organized a workshop intended to inform traditional healers about AIDS and HIV infection. After the workshop, the medicine men, diviners and healers who participated were almost twice as likely as before to know that blades traditionally used for tattooing or making ritual marks can help spread HIV, and were more than twice as likely to know that HIV is the cause of AIDS and that one can be infected without having symptoms. In addition, the percentage who claimed that they themselves or someone they knew could cure or treat AIDS dropped from almost three-quarters to less than half. Meanwhile, two other African nations have utilized popular songs to spread information about HIV and AIDS. In nonelectrified rural villages of Sierra Leone, residents occasionally borrow a portable electrical generator to run a tape machine for a "disco night"; danceable songs about HIV education and prevention have been played at such discos to inform young people about AIDS. In Ghana, a division of the Health Ministry organized a contest for songs about AIDS. The contest attracted more than 100 entrants, and after the 10 best songs were selected (based on their message, beat and cultural acceptability), they were played at a free concert in Accra attended by 2,000 people.

1. "Country Watch," *AIDS Health Promotion Exchange*, No. 4, World Health Organization Global Programme on AIDS, Geneva, 1988, pp. 7–10.

NORPLANT Gets Preliminary OK

The Maternal Health Committee of the U.S. Food and Drug Administration (FDA) recommended on April 27 that the FDA, which decides what drugs and devices may be sold in the United States, approve the NORPLANT system of hormonal contraceptive implants.[1] It is expected that the FDA will announce its final decision within the next few months. NORPLANT is now approved for general use in 10 developing countries (Chile, China, Colombia, the Dominican Republic, Ecuador, Indonesia, Peru, Sri Lanka and Venezuela), as well as in Finland and Sweden. Research on NORPLANT has been conducted in another 29 countries.[2]

1. "U.S. Panel Endorses Birth Control Implant," *New York Times*, Apr. 28, 1989, p. 14.
2. "41 Countries Have Implant Experience," *NORPLANT Worldwide*, No. 12, Dec. 1988, p. 1.

Nigeria Under Pressure

Facing an annual growth rate of 3.3 percent and the prospect of the world's third largest population by the year 2050 (about 564 million), the government of Nigeria has announced that it is taking serious steps to reduce future levels of population growth.[1] The primary aim is to limit at least 80 percent of Nigerian women to families of only four children—two fewer than the current average. In addition, the government plans to make it harder for Nigerian women to marry before age 18, and expects to offer primary health care services (defined as those encouraging birth spacing, breastfeeding, better nutrition and utilization of immunization services and clean water) in every local governmental jurisdiction, even though only about one-third of such areas now have these services.

1. J. L. Jacobsen, "Nigeria Opts for Smaller Families," *World Watch*, Mar.–Apr. 1989, p. 9.

DHS Takes the Next Step

With the survey fieldwork now completed in 28 of the 30 developing countries participating in the first stage of the Demographic and Health Surveys (DHS) project, the Institute for Resource Development/Westinghouse (IRD) has embarked on the second stage, dubbed DHS-II.[1] The next step will involve the fielding of 25 new surveys—half of them in Sub-Saharan Africa—as well as 25 further analyses of the data that have already been collected and the establishment of a permanent data archive. In addition, two new series of publications—the DHS Comparative Studies and the DHS Methodological Reports—will be introduced. Finally, the IRD is planning to offer five one- or two-year fellowships to young researchers from developing countries.

1. "DHS Enters New Phase of Research and Training," *Demographic and Health Surveys Newsletter*, Vol. 2, No. 1, 1989, p. 1.

New Lab Test for HIV

The U.S. Food and Drug Administration has approved a new blood test that can identify the presence of antibodies to the human immunodeficiency virus (HIV) in just five minutes.[1] The new technique, which uses genetically engineered proteins to detect the presence of HIV antibodies, is not as accurate as the standard ELISA test, but it is expected to cost between one-half and one-fifth as much as the ELISA test. Because of the new technique's lower cost and the ease with which it can be performed, the FDA believes that it will be much better suited to developing country settings than the ELISA test.

1. "New Recombigen LA Test for HIV Approved, But Accuracy Questioned," *AIDS Alert*, 4:26, 1989.

Schooling and Fertility In Pakistan

Besides being perhaps the most important independent determinant of fertility in Pakistan, women's education may also be the most useful marker for women's status there.[1] If this is so, then current education levels among male and female children indicate that gender inequality in Pakistan is likely to remain unchanged for the foreseeable future: Urban boys are three times more likely than urban girls to be attending school, while rural boys are more than six times more likely than rural girls to be in school; in one rural region (Sind), boys are 16 times more likely than girls to be going to school. Although the male and female children of the most highly educated and modern Pakistanis are equally likely to be in school, the investigators conclude that "the perpetuation of gender inequality through differential education of boys and girls is strong throughout much of Pakistani society."

1. Z. Sathar et al., "Women's Status and Fertility Change in Pakistan," *Population and Development Review*, 14:415, 1988.

No AIDS Vaccine on the Horizon?

High-level AIDS experts such as Jonathan Mann, director of WHO's Global Programme on AIDS, and the directors of the U.S. Centers for Disease Control and the U.S. Food and Drug Administration now believe that a vaccine against the human immunodeficiency virus (HIV) is further off than had originally been hoped.[1] Among their reasons for discouragement are the unexpected biological complexity of HIV, the inadequacy of animals as test subjects for a vaccine and the freedom with which HIV travels through the body (either through the bloodstream or inside body cells). Although 10 vaccines are being investigated in the United States alone, none is likely to be in general use for at least another 10 years.

1. "Outlook Poor for Rapid Development of AIDS Vaccine," *AIDS Alert*, 4:1, 1989.

Men Favor Condoms with Spermicide

A study conducted last year in Bangladesh, Egypt, Ghana, Honduras and Mali indicates strong support for spermicidally lubricated condoms: Of more than 600 men who were given a month's supply of one of two brands of such condoms, the vast majority liked them, and at least three-quarters preferred them to their usual brand.[1] A surprising subsidiary finding of the study was that three-fifths of the respondents believed the new condoms to be thinner than their usual brand, even though there was no real difference in the thickness of the condoms. The fact that they perceived better lubricated condoms as being thinner is an indication of how the addition of spermicidal lubrication may increase the acceptability of condoms.

1. L. S. Potter, N. E. Williamson and K. Clarke, "Acceptability of Spermicidally Lubricated Condoms in Five Developing Countries and Related Policy Issues," paper presented at the Fourth International Conference on AIDS, Stockholm, June 12–16, 1988.

Women's Education and Fertility: A Decade of Change in Four Latin American Countries

The educational attainment of adult women is increasing rapidly enough to produce important fertility declines. However, declines within educational categories, particularly among the least educated, have also been impressive.

By Mary Beth Weinberger, Cynthia Lloyd and Ann Klimas Blanc

Summary

New survey data show that there has been a rapid fertility decline in four Latin American countries. Furthermore, in three of the four (Colombia, the Dominican Republic and Ecuador), the gap in fertility between educated and uneducated women, which had been very wide during the 1970s, has begun to narrow. However, educational differentials in fertiity remain substantial, particularly in Peru, where the educational differential has remained as overall fertility has declined.

Women of reproductive age in these four countries have completed 6–7 years of schooling, on average, although the proportion of women with no education or with only a few (1–3) years ranges from 23–31 percent. As well as having lower fertility and desiring smaller families, women with more education generally marry later and are more likely to practice contraception than are less-educated women.

In all four countries, women's educational attainment has been rising rapidly enough that the increase in the proportion of more highly educated women has by itself been an important cause of fertility decline. Improvements in education alone would explain 40–67 percent of the fertility decline if there had been no change in behavior within the education groups. At the same time, fertility declines within education groups have been large, and in three of the four countries have contributed over half of the observed fertility decline. In addition, contraceptive use increased substantially within education categories, while desired family size appears to have fallen. There has also been a trend within education groups toward earlier or more universal marriage, an unexpected finding.

Introduction

Of all the social factors that have been widely studied for their impact on fertility, women's educational attainment is the one that has proved most consistently and strongly related to fertility. Cross-national comparisons of data from developing countries reveal a variety of patterns in both the size of fertility differentials by education and the level of education at which fertility begins to decline sharply.[1] A United Nations (UN) study based on data from the World Fertility Surveys (WFS) found that the size and pattern of these differences varied according to such country characteristics as region, level of socioeconomic development and phase of the fertility decline.[2] In general, fertility differentials according to education were found to be larger in the relatively more developed of the developing countries. Additionally, the educational differentials in fertility seen in most developing countries appeared to have widened during the period leading up to the WFS (for most countries, the mid-to-late–1970s), primarily because of decreased fertility among the more educated but also in some cases because of small increases in fertility among those with little or no education.

Latin America stood out in the UN study as the region having, on average, the largest differentials in fertility by women's education. The mean difference between the total fertility rate (TFR) of women with no education and the TFR of women with seven or more years of schooling was 3.6 children per woman in Latin America, 3.1 in Asia and 2.0 in Africa.[3] One analysis concluded that "instances of very wide differentials probably reflect the early stages of the transition to lower, deliberately controlled fertility."[4]

With the advent of data from the Demographic and Health Surveys (DHS) program—an international survey program implemented by the Institute for Resource Development/Westinghouse and funded by the U.S. Agency for International Development—it is now possible to take a preliminary look at recent trends in fertility and related variables, according to women's education, for some of the countries that also participated in the WFS program. For this article, we chose to study four Latin American countries—Colombia, the Dominican Republic, Ecuador and Peru. The choice was a practical one because they were among the relatively few countries participating in the DHS for which data were available at the time this analysis was conducted. However, the choice was also strategic, given the very large education-related fertility differentials found among the four countries in the mid-to-late–1970s (a difference of four or more children between extreme education categories), as well as the relatively large fertility declines seen in those countries over the last 10 years.

In all four DHS samples and in three of the four WFS samples, all women aged 15–49 were interviewed. In the case of the Peru WFS, the main interview covered only ever-married women; the household survey, conducted in conjunction with the individual interviews, provided information about the proportion of women who had never married, by age and education, and this information was used to adjust many of the statistics shown here to reflect the experience of all women.* All the surveys were nationally representative, ex-

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*In the case of fertility measures, the adjustment for Peru involves the assumption that single women had had no children.

cept that in both the WFS and the DHS, a few sparsely populated areas containing less than five percent of the population in Colombia and Ecuador were excluded, and that in the Peru DHS, areas containing six percent of the population were excluded for security reasons. Data collection and tabulation procedures were closely comparable for the measures examined here, except as noted in the discussion below. The WFS was conducted in these four countries between 1975 (the Dominican Republic) and 1979 (Ecuador); the Colombia, Dominican Republic and Peru DHS took place in 1986, while the Ecuador DHS was conducted in 1987. The intervals between the surveys vary from approximately seven years in Ecuador to 11 years in the Dominican Republic.*

Despite their proximity, the four countries considered here are at different stages of demographic transition and socioeconomic development. Although fertility levels in these countries have converged somewhat during the decade under study, a concomitant trend in indices of socioeconomic well-being has not been as apparent. The per capita gross national product (GNP), expressed in constant dollars, was stagnant or declined in all of these countries between 1980 and 1985, although Colombia, the Dominican Republic and Ecuador experienced growth in real per capita GNP (ranging from seven to 14 percent) over the full decade 1975–1985.† Peru, on the other hand, provides a contrast with the other three countries, with a decline in real per capita GNP of roughly 15 percent over the decade.

Peru also lags behind the other countries when infant mortality rates are compared: Over the five years preceding the DHS surveys, Peru's infant mortality rate was 76 infant deaths per 1,000 births, while that of the Dominican Republic was 68 per 1,000, Ecuador's infant mortality rate was 58 per 1,000 and Colombia's was 33 per 1,000.‡ On the other hand, fertility levels in Ecuador and Peru are now roughly the same (TFRs of 4.3 and 4.5 births per woman, respectively, for the five years before the DHS), while fertility rates in Colombia and the Dominican Republic are distinctly lower (TFRs of 3.3 and 3.8, respectively).

In this article, we examine the association between women's education and levels of fertility (and several fertility-related variables) at the times of the WFS and the DHS. Our aim is to determine whether educational differentials in fertility have widened, have narrowed or have been stable over this period, and how much of the overall fertility trend might be attributed simply to changes in educational attainment now that women with more education (who generally have lower fertility) make up a larger proportion of the population. To do this, we use a "components-of-difference" approach.§

The analysis described here relies on standard, basic measures of fertility and related phenomena—the types of statistics shown in many survey reports. However, because different classifications have been employed in published work based on the WFS and DHS, particularly for comparisons by education, some new tabulations were needed. We have restricted our focus to overall educational differentials and have left for future work the more exhaustive task of examining the independent impact on fertility of education when the influences of other demographic and socioeconomic variables are controlled for. At the same time, numerous earlier studies provide grounds for confidence that the relationship between women's education and fertility is not merely an artifact of education's association with other social or economic variables: The introduction of statistical controls for such factors generally diminishes the size of educational differentials in fertility, but those that are large to begin with usually remain relatively large.[5]

Trends in Education

At the time of the DHS, Colombian women aged 15–49 had completed 5.8 years of schooling, on average, while women in Peru and the Dominican Republic had completed 6.8 years of education and those in Ecuador had finished 7.1 years of schooling (Table 1, page 6). The lower average among Colombian women is due not to a higher percentage of women with no schooling but rather to a much more concentrated distribution of educational attainment, with 62 percent of the women having six years of schooling or less and only 17 percent having 10 or more years. In contrast, the percentage of women with 10 or more years of education in the other three countries ranges from 28 percent to 35 percent. Peru has the highest percentage of women with no schooling (11 percent), as well as the highest percentage with 10 or more years of schooling (35 percent).

Data from the DHS and the WFS can be compared for evidence of recent trends in educational attainment. At the time of the DHS, the average educational attainment of a woman of reproductive age was roughly 1–2 years greater than at the time of the WFS. The amount of change in educational attainment was smallest in Ecuador, but once the number of years between surveys is taken into account, the average annual growth in educational attainment among ever-married women was slowest in Colombia (0.12 years of education per annum) and most rapid in Peru (0.23 years per annum). Increases in educational attainment are particularly notable at the upper end of the educational distribution, with the proportion of women with seven or more years of schooling rising anywhere from 10 percentage points (in Ecuador) to 22 percentage points (in the Dominican Republic) between the two surveys.

A comparison of mean educational attainment by age between the two surveys provides further evidence of these trends

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*The amount of time between the midpoints of survey fieldwork was 10.4 years for Colombia, 11.3 years for the Dominican Republic, 7.4 years for Ecuador and 9.2 years for Peru.

†This information was derived from the UN Population Division's Population, Resources, Environment and Development data bank, based on estimates of real GNP per capita (in constant dollars) as estimated from World Bank income data and Population Division estimates of population growth. World Bank estimates of per capita GNP for 1985 (in current U.S. dollars) are $1,320 for Colombia, $760 for the Dominican Republic, $1,160 for Ecuador and $1,010 for Peru. (See: World Bank, *World Tables, 1987: The Fourth Edition*, Washington, D.C., 1988.)

‡UN estimates of infant mortality for the period 1980–1985 are higher than the DHS estimates, but the pattern of intercountry differences is similar: For Peru, the UN estimate is 99 deaths per 1,000 births, while rates are 70–75 deaths per 1,000 in the Dominican Republic and Ecuador and 50 deaths per 1,000 in Colombia (see: *World Population Prospects, 1988*, ST/ESA/SER.A/106, New York [forthcoming]). It should be noted that although the DHS fertility and mortality data that are discussed in this article represent the most recent available data, their quality has yet to be fully evaluated.

§The components-of-difference technique employs the statistical method of direct standardization to address such hypothetical questions as: How much would the overall fertility level have changed if fertility had remained constant within educational groups but the educational attainment of women had changed in the manner actually observed between the two surveys? How much would fertility have changed if the educational distribution had remained constant but education-specific fertility rates had changed in the manner actually observed? Such calculations are described in detail in the footnote on page 12. (For a more complete explanation of this approach, see: E. Kitagawa, "Components of a Difference Between Two Rates," *Journal of the American Statistical Association*, **50**:1168, 1955; for a general discussion and for illustrations of direct standardization, see: H. S. Shryock and J. S. Siegel, *The Methods and Materials of Demography*, U.S. Department of Commerce, Washington, D.C., 1971.)

Table 1. Selected indicators of women's education, marital patterns, fertility, contraceptive use and breastfeeding behavior and fertility preferences, all among 15–49-year-old WFS and DHS respondents, by country and survey

Indicator	Country and survey							
	Colombia		Dominican Republic		Ecuador		Peru	
	WFS 1976 (N= 5,339)	DHS 1986 (N= 5,331)	WFS 1975 (N= 3,110)	DHS 1986 (N= 7,649)	WFS 1979 (N= 6,781)	DHS 1987 (N= 4,713)	WFS 1977 (N= 5,419*)	DHS 1986 (N= 4,999)
EDUCATION								
Mean no. of years completed								
All	4.4	5.8	4.7	6.8	5.9	7.1	u	6.8
Ever-married	3.7	5.0	3.9	5.9	5.2	6.3	3.8	5.9
% distribution of women by no. of years of education								
0	12	6	13	6	10	8	23	11
1–3	33	25	31	21	21	15	21	18
4–6	31	31	29	25	35	33	24	20
7–9	17	21	16	21	16	16	}32	16
≥10	8	17	11	28	19	29		35
Total	100	100	100	100	100	100	100	100
MARRIAGE								
Singulate mean age at marriage	22.1	23.6	20.5	21.5	22.1	22.2	23.2	23.1
% single								
At 20–24	44	48	27	37	43	41	49	51
At 45–49	9	5	3	2	6	3	6	4
% distribution of time from ages 15–49† spent								
Single	28	28	17	20	25	23	27	26
In a union	61	60	66	63	66	69	65	66
Legal	46	41	28	26	48	48	51	48
Consensual	15	19	38	37	18	21	14	18
Divorced/separated	8	9	15	15	6	6	6	6
Widowed	3	3	2	2	3	3	2	2
Total	100	100	100	100	100	100	100	100
FERTILITY								
TFR in 5 years before survey	4.7	3.3	5.7	3.8	5.3	4.3	5.6	4.5
Mean no. of children ever born to women 40–49	6.4	5.5	6.5	6.2	6.6	5.7	6.8*	6.2*
% of reproductive years spent with a child under six†	43	37	47	38	48	44	47	44
CONTRACEPTION & BREASTFEEDING								
% of currently married women currently using a method	43	65	32	50	34	44	31	46
Mean duration of breast-feeding (in months)‡	9	11	9	9	13	14	13	16
FERTILITY PREFERENCES								
Mean no. of children preferred	3.5	2.7	4.3	3.4	3.5	3.1	3.8*	2.9*
% who want no more children§								
Observed	61	70	52	63	56	63	61	70
Standardized **	55	70	46	64	48	62	52	68

*Ever-married women only. †Synthetic cohort estimates.

‡Prevalence-incidence estimates, based on births in the preceding 24 months for WFS, 36 months for DHS.

§Including women sterilized for contraceptive reasons. For the WFS, based on currently married fecund women; for the DHS, based on all currently married women aged 15–49.

**Standardized for number of living children (including current pregnancy), using as standard the family-size distribution from the Colombia DHS.

Note: u=unavailable.

Sources: S. Balkaran and D.P. Smith, *Socioeconomic Differentials in Breastfeeding, WFS Comparative Studies: Additional Tables,* World Fertility Survey, London, 1984; see reference 16; B. Ferry and D.P. Smith, "Breastfeeding Differentials," WFS Comparative *Studies No. 23,* International Statistical Institute/World Fertility Survey, Voorburg, the Netherlands, 1983; United Nations, 1987, see reference 2; and special tabulations.

(Figure 1, page 8), and shows that WFS and DHS data agree closely for most cohorts covered by both surveys. Educational attainment is higher in the cohort of women aged 25–29 at the time of the DHS than in the same birth-cohorts at the time of the WFS; the probable reason for this difference is that a nontrivial number of these women were still in school at the time of the earlier survey. If this is so, it may be that as women aged 15–24 at the time of the DHS grow older, their educational attainment will rise even further. Otherwise, trends in the two data sets appear largely consistent, confirming that the definition of educational attainment was reasonably comparable between the two surveys and demonstrating the steady rise in educational attainment over time.

Further evidence of the dramatic changes that have occurred in women's education can be seen in Figure 2 (page 10), which shows the marked decline in the percentage of women with no education.* In each country, only 2–3 percent of women aged 15–19 at the time of the DHS had no education; on the other hand, in the cohort born 40 years earlier (the oldest women interviewed in the WFS, who were 55–59 at the time of the DHS), the proportion with no education ranged from 23 percent in Ecuador to 43 percent in Peru.

Changes in Fertility and Other Variables

Changes in fertility over the decade derive from changes in the principal proximate determinants of fertility—marriage, contraceptive use and breastfeeding—that are described below. Trends in fertility preferences, which might motivate changes in fertility, are also addressed.

Several indicators of marriage timing and marital status ("marriage" in this discussion includes consensual as well as legal unions) are shown in Table 1. The four countries considered here are fairly typical of the region; the singulate mean age at marriage at the time of the WFS was in the range of 22–23 years in the three South American countries and was lower (20.5 years) in the Dominican Republic.

On occasion, the singulate mean age at

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*In the Dominican Republic, the proportion who had completed no years of education, as reported in WFS individual interviews, was several percentage points greater than the proportion with no education reported in the WFS household interviews or in the DHS (see Figure 2). The trend is very similar in all sources. In Peru, the proportions from the WFS individual interview are shown only for cohorts aged roughly 30 or more at the time of the interview; the exclusion of single women from the Peru WFS distorts the pattern among younger women.

marriage can give a misleading impression of trends in marriage timing.[6] Consequently, Table 1 also includes the proportion single at ages 20–24 (as an indicator of the extent of early marriage) and summary measures of the amount of time spent in various marital or union statuses. All indicators suggest that although age at marriage in the Dominican Republic rose between the two surveys (by one year in the singulate mean age), it has remained lower there than in the other countries. There was very little change in age at marriage in the three South American countries. In Colombia, although the singulate mean age increased by 1.5 years, there were only minor changes in the proportion single at ages 15–29, the ages at which most marriages occur (not shown): Among 20–24-year-olds, the proportion single was four percentage points higher at the time of the DHS than at the time of the WFS, while it was only one percentage point higher among women 15–19 and among women 25–29.

According to the DHS data, only 3–5 percent of 45–49-year-old women in the three South American countries have never been in a union; in contrast, WFS data showed that 6–9 percent of women had never entered a legal or consensual union by the end of their reproductive years. This is a higher level than in most developing countries, although it is not high by developed-country standards. Either the DHS obtained a more complete reporting of unions—the reporting of consensual unions indeed being often problematic—or there has been a genuine increase in the proportion marrying. In contrast, in the Dominican Republic, both surveys found that only 2–3 percent of women remain single by the end of their reproductive years.

Women in the four countries are estimated to spend 60–69 percent of their reproductive years in a marital union and to be single for 20–28 percent of those years.* Only 2–3 percent of the reproductive years, on average, are spent as a widow; a typical woman in the three South American countries can expect to spend 6–9 percent of her reproductive years divorced or separated, compared with 15 percent in the Dominican Republic. These patterns remained remarkably stable between the WFS and the DHS. Consensual unions are prevalent in all of the countries, but only in the Dominican Republic are they more common than legal marriages. Since the WFS, there has been a shift in the distribution between legal and consensual unions in the three South American countries, suggesting either that consensual unions are becoming more common or that women are becoming more willing to report them.

When the four countries' WFS surveys were conducted in the mid-to-late–1970s, fertility levels ranged from 4.7 children per woman in Colombia to 5.7 in the Dominican Republic, despite moderate levels of contraceptive use (31–43 percent of married women were practicing contraception). Even at the time of the WFS, however, fertility in the four countries had already declined substantially, as can be seen by comparing the TFR to the number of children ever born to older women. Currently, the highest fertility among the four countries is found in Peru and Ecuador (TFRs of 4.5 and 4.3 births per woman, respectively), followed by the Dominican Republic (3.8) and Colombia (3.3). Between the WFS and the DHS, the TFR declined by amounts ranging from 1.0 births per woman (18 percent) in Ecuador to 1.9 births per woman (33 percent) in the Dominican Republic. On an annual basis, the TFR declined by about two percent per year in Ecuador and Peru and by about three percent per year in Colombia and the Dominican Republic (not shown).

The indicators in Table 1 suggest that most of the recent fertility decline in these countries may have resulted from increased contraceptive use, since the other major proximate determinants of fertility—marriage and the duration of breastfeeding—showed little change over the period. (It is impossible to tell from available data whether induced abortion contributed to the trend.) The growth in contraceptive prevalence ranged from 10 percentage points in Ecuador to 22 percentage points in Colombia, with a 15 percentage-point gain in Peru and an 18 percentage-point rise in the Dominican Republic. The fertility effect to be *expected* as a result of these increases can be estimated using the Bongaarts proximate determinants model[7] (which also takes into account the estimated effectiveness of the contraceptive methods used).†

The model confirms that changes in contraceptive practice are large enough to account for most or all of the overall fertility trend, as can be seen below, where the observed percentage change in fertility is compared with the "expected" change as a result of contraceptive use:

Country	Observed	Expected
Colombia	29	38
Dominican Republic	34	30
Ecuador	19	17
Peru	20	19

Differences between the observed and expected changes could be due to a variety of factors, including changes in fertility determinants other than contraceptive use, imperfections in the data and approximations used in the model itself. The larger increases in contraceptive prevalence occurred in the countries with the more active family planning programs: Ecuador and Peru had relatively weak family planning programs in the early 1980s, in contrast to the Dominican Republic, which had a moderately strong program, and Colombia, which had a very strong program.[8]

At both surveys, the mean duration of breastfeeding was several months shorter in Colombia and the Dominican Republic (9–11 months) than in Ecuador and Peru (13–16 months). The average durations did not decline between the WFS and the DHS, and indeed appear to have increased by 1–3 months in Colombia, Ecuador and Peru. A decline in breastfeeding duration might have been expected on the basis of cross-sectional data indicating both that the duration of breastfeeding is generally shorter in the more economically advanced countries and that the length of breastfeeding decreases as educational attainment rises.[9] The apparent increase in the duration of breastfeeding must be examined in greater depth before one can conclude that it is genuine, but trend data for other developing countries show a mixture of instances of decreasing, stable and increasing duration of breastfeeding rather than a generalized decline in the practice.[10] Increases have been reported in several other Latin American countries, including Costa Rica, Guatemala, Panama and Paraguay.[11] The recent publicity given to the health advantages of breastfeeding may well have had an effect on breastfeeding practice.

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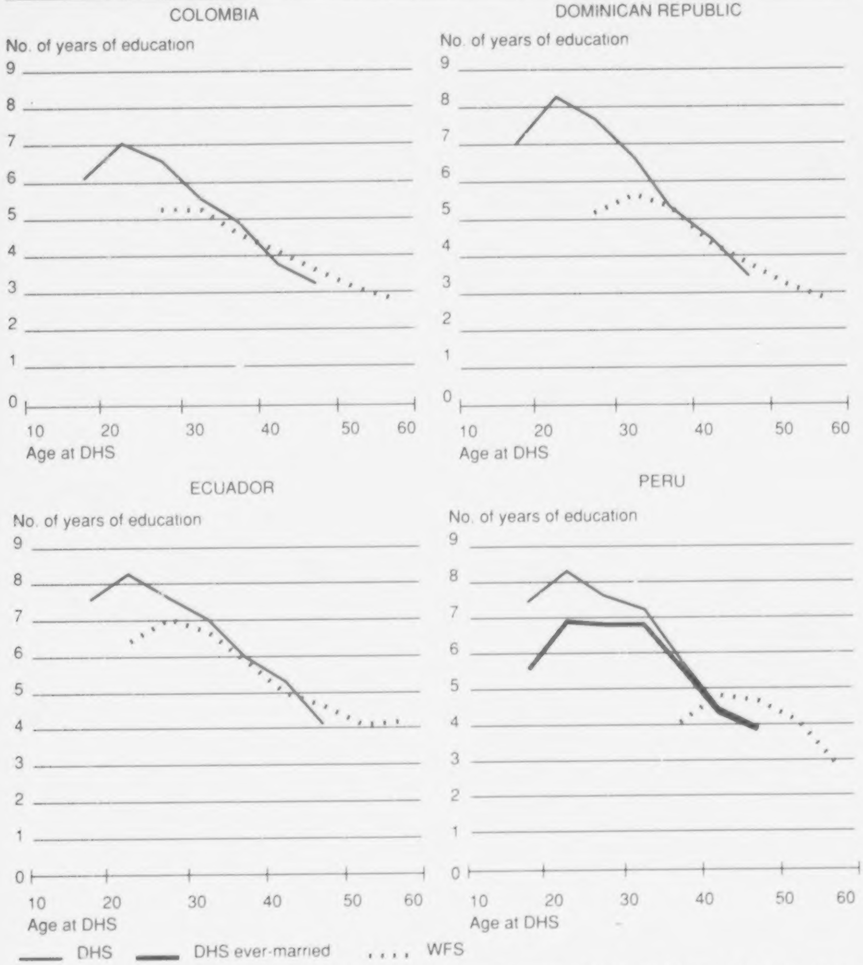
*The synthetic-cohort estimates of the proportion of a woman's reproductive years (ages 15–49) spent in each union status are calculated by summing the proportions currently in the status over five-year age-groups, multiplying by five and dividing by the number of reproductive years (35). As with other synthetic-cohort measures discussed here, this measure does not make allowance for women's risk of death before age 50.

†The expected percentage change in fertility due to change in contraceptive practice is calculated as 100(1-C (DHS)/C (WFS)), where the C indices (which represent the effect of contraceptive practice at the time of the WFS and DHS) are calculated as described in Bongaarts and Potter (see: reference 7), using the following method-specific estimates of use-effectiveness: sterilization, 1.0; IUD and injectables, 0.95; pill, 0.90; others, 0.70. Method distributions at each survey are shown in the main survey reports and in United Nations, *Levels and Trends of Contraceptive Use as Assessed in 1988*, ST/ESA/SER.A/110, 1989.

Figure 1. Mean number of years of education completed, for women, by age at the time of the DHS survey



Note: Based on all women, except Peru WFS is an ever-married sample—DHS results shown for ever-married, for comparison.

It is worth noting that breastfeeding remains an important determinant of natural fertility levels in these countries. Breastfeeding durations averaging 9–16 months can be expected to reduce fertility levels to roughly 15–30 percent below the level that would be observed in the absence of breastfeeding, based on a calculation of the Bongaarts index of postpartum infecundability.[12] However, the increases between the WFS and the DHS in average breastfeeding duration (amounting to 1–3 months) would be expected to decrease fertility levels by only about 3–8 percent, as calculated from the ratio of the indices of postpartum infecundability associated with each country's duration of breastfeeding at the WFS and the DHS. Thus, these increases are of importance more for their potential health effects than for their relatively modest contribution to overall fertility decline.

At the time of the WFS, the mean number of children preferred by women in the four countries ranged from 3.5 to 4.3, lower than the TFR by amounts ranging from 1.2 to 1.8 children per woman. Ideal family size as measured in the DHS, however, is around 10–25 percent lower than the preferred family size as measured in the WFS. Different question wording in the WFS and the DHS was probably responsible for some (but not all) of the apparent decline in preferred family size.* An experimental survey conducted as part of the Peru DHS suggests that the change in wording between surveys accounted for about 20 percent of the overall decline in ideal (or preferred) family size in that country: Of two samples of women interviewed in the DHS, one was asked the standard DHS question, while the other answered the question as it had been worded in the WFS. The WFS wording produced a preferred family size about one-quarter child higher than did the DHS wording.[13] (The data on Peru shown in Table 1 are derived from the response to the standard DHS question.)

A second indicator of fertility intentions also shows a decline in preferred family size in all four countries. At the time of the DHS, roughly two-thirds of married women of reproductive age either wanted to have no more children or had been surgically sterilized for contraceptive reasons. At the time of the earlier survey, the percentages were 7–11 points lower, and were 14–18 points lower after standardization for current family size. It is important to note that the base population differs at the two dates;† however, as is not the case for the "ideal family size" measure, this lack of comparability is unlikely to have produced an overstatement of the amount of change. Increases in the proportion intending to have no more children are especially marked among women with 2–4 children (not shown). For instance, in the DHS, between 56 and 69 percent of women with two children intended to stop having children (a mean of 63 percent), while in the

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*The question in the WFS was: "If you could choose exactly the number of children to have in your whole life, how many children would that be?" In the DHS, this question wording was retained for respondents who had no children, but women who had children were asked: "If you could go back to the time [when] you did not have any children and could choose exactly the number of children to have in your whole life, how many would that be?" The DHS question was framed in this way in the hope that such an approach would reduce any reluctance on the woman's part to report a number lower than her current family size.

†The base population in the DHS was all currently married women, while in the WFS, women who thought they were infecund (and thus were not questioned about their desire for more children) were excluded. Because of differences in questions about fecundity status, it is not possible to construct the same base population for the DHS. However, to check on the importance of the difference between base populations, DHS tabulations were prepared based on "behaviorally infecund" married women (i.e., currently married women who had a noncontraceptive open birth interval of at least five years). The "fecund" base produces proportions wanting no more children that are higher by 1–3 percentage points than those for the currently married base, which are shown in Table 1. The data in the table are therefore thought to give a conservative indication of the amount of change. None of the results discussed here differ substantially if the "married fecund" base population is used for the DHS in place of the "currently married" base.

WFS, the proportions ranged from 33 to 50 percent, with a mean of 43 percent.

An obvious consequence of high fertility is that women have young children to care for during an extended portion of their lives. We estimate here the proportion of a woman's reproductive years spent with a young child and examine the impact of education on this proportion. For this discussion, we concentrate on synthetic-cohort estimates of the amount of time women spend with a young child, based on age-specific tabulations of the percentage of women who currently have a child aged under six.* The degree of conflict between child care and women's other activities depends on many factors, most obviously on the availability of child care from other sources (including the woman's spouse and older children as well as other relatives and nonrelatives) and on the extent to which other activities can be combined with child care. We have no direct evidence on these points.

Table 2. Change in selected rates and percentages between WFS and DHS, by women's education, according to country

Indicator & education	Colombia			Dominican Republic			Ecuador			Peru		
	WFS	DHS	Abs. change	WFS	DHS	Abs. change	WFS	DHS	Abs. change	WFS	DHS	Abs. change
TFR (for 5 yrs. preceding survey)												
None	7.1	5.4	−1.7	7.0	5.6	−1.4	7.8	6.4	−1.4	7.3*	7.0*	−0.3*
Primary	5.2	4.2	−1.1	6.1	4.4	−1.7	6.2	5.2	−1.0	6.8	6.1	−0.7
Secondary	2.7	2.5	−0.2	2.7	2.9	0.2	2.8	3.1	0.2	5.1	4.7	−0.4
Higher	2.5	1.5	−1.0	1.3	2.2	0.9	2.0	2.3	0.3	3.3	2.9	−0.3
% of currently married women currently using a method												
None	22	51	29	17	38	20	12	18	6	12	19	7
1–3 years	34	61	26	26	47	21	20	37	16	24	33	9
4–6 years	51	65	14	37	51	15	36	43	7	43	46	3
7–9 years	64	73	9	46	48	3	49	50	0	51	58	7
≥10 years	67	73	6	54	57	3	58	61	3	56	66	10
% of reproductive years spent with a child under six†												
None	57	46	−11	52	52	−1	65	58	−7	57	59	3
1–3 years	50	47	−3	57	45	−11	59	55	−4	54	56	2
4–6 years	40	40	0	44	43	−1	49	48	−1	46	46	0
7–9 years	32	31	0	38	36	−2	36	37	1	33‡	33‡	1‡
≥10 years	24	24	0	22	28	6	28	32	4			
No. of years spent single before age 50†												
None	21.3	22.4	1.1	19.0	18.2	−0.9	20.2	20.2	0.0	22.3	20.3	−2.1
1–3 years	23.6	21.9	−1.7	18.6	19.0	0.4	22.1	20.1	−2.0	22.0	21.4	−0.7
4–6 years	24.6	23.4	−1.1	20.3	19.5	−0.8	23.0	21.3	−1.8	23.2	22.4	−0.9
7–9 years	26.6	25.6	−1.0	22.8	22.2	−0.6	24.0	23.1	−1.0	27.6‡	25.9‡	−1.7‡
≥10 years	27.7	29.0	1.3	27.0	25.0	−2.0	27.2	25.7	−1.4			
% wanting no more children (controlled for current family size)§												
None	49	70	21	42	61	19	40	54	14	47	63	16
1–3 years	56	71	16	45	63	18	44	63	19	52	70	18
4–6 years	56	69	13	49	66	18	50	63	13	54	68	14
7–9 years	54	72	18	47	64	17	54	62	9	57	71	14
≥10 years	59	65	6	48	62	14	57	63	6	54	69	15
Mean no. of children preferred**												
None	4.6	3.4	−1.2	5.1	3.6	−1.4	4.7	3.6	−1.1	4.2*,††	3.2*,††	−1.0*,††
Primary	3.6	2.9	−0.7	4.2	3.5	−0.8	3.8	3.4	−0.4	3.9	3.2	−0.6
Secondary	3.0	2.4	−0.6	3.6	3.1	−0.6	2.8	2.6	−0.2	3.6	2.8	−0.8
Higher	3.0	2.3	−0.6	4.1	3.2	−0.8	2.7	2.7	−0.0	3.3	2.6	−0.7

*Education categories are: 0 years, 1–3 years, 4–6 years and ≥7 years.

†Synthetic cohort estimates. ‡For women with ≥7 years of education.

§Standardized on the family-size distribution of the Colombia DHS.

**Question wording differs between the WFS and DHS. ††For ever-married women.

Note: Difference between WFS and DHS data may not equal change shown above because of rounding.

Sources: See reference 16; and special tabulations.

On average, given fertility patterns at the time of the DHS, women can expect to spend between 37 and 44 percent of their time between ages 15 and 49 with one or more children under six. This represents a decrease of 3–9 percentage points (equivalent to roughly 1–3 years) from values seen at the time of the WFS. In proportional terms, the declines in this variable are smaller than those observed for the TFR: The latter amounted to 18–33 percent of levels found in the WFS, compared with declines of 6–19 percent in the amount of time with a young child. Such smaller declines are to be expected in general, particularly where intervals between births are short, as tends to be the case in Latin America.† A trend toward wider birthspacing, which the WFS data suggested was already under way in some Latin American countries,[14] and declines in infant and child mortality may have partially countered the effect of declining fertility levels on the time spent in child care. Still, in Colombia and the Dominican Republic, declines in the number of births have led to a reduction of 2–3 years in the average length of time women can expect to spend caring for young children.

Differentials by Education

At the time of the WFS, fertility differentials by education in most Latin American countries were large and had increased in the preceding years.[15] In the four countries considered here, there was little or no evidence that fertility had begun to decline among women with no education, but rates of childbearing had dropped among women with at least four years of schooling. WFS data in Table 2 show the TFR among women with no schooling to have been very high, in the range of 7–8 chil-

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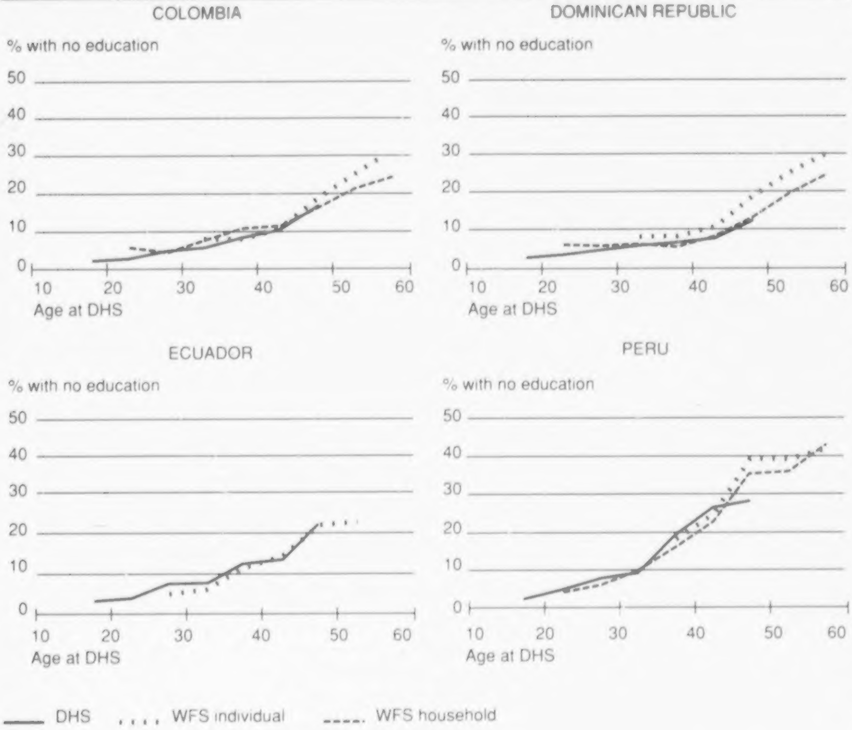
*The synthetic-cohort estimates of the proportion of the reproductive years (ages 15–49) spent with a child under age six are calculated by summing the proportions who currently have a living child under age six over five-year age-groups, multiplying by five, and dividing by the number of reproductive years (35).

†For example, consider a hypothetical population in which women bear four children, all spaced three years apart. Each woman spends 15 years with at least one child under six (assuming that all mothers and children survive). A 25 percent decline in fertility levels (from four to three births per woman) decreases the amount of time spent with a young child by three years, or by 20 percent.

Figure 2. Percentage of women with no education among respondents to WFS individual and household surveys and DHS surveys, by age at the time of the DHS survey



Note: Data are for all women, except for Peru, which is based on ever-married women only. The WFS household data are plotted at 10 years more than the age at interview.

Source: **WFS household data**—Y. Zoughlami and D. Allsopp, *The Demographic Characteristics of Household Populations, Revised Edition*, Comparative Studies, No. 45, World Fertility Survey/International Statistical Institute, Voorburg, the Netherlands, 1985.

dren per woman, compared with TFRs of 1–3 among women with a secondary or higher education (except in Peru).

However, in Colombia, the Dominican Republic and Ecuador, educational differentials in fertility narrowed between the WFS and the DHS. By the time of the DHS, the TFR in these three countries had declined by 1.0–1.7 children among women with no education or only primary schooling, while among women with a secondary education there was little or no further decline beyond the already low levels seen in the WFS.* In Peru, on the other hand, the fertility of uneducated women remained above seven children per woman, and the fertility differential between education groups was, if anything, slightly larger in the DHS than in the WFS.

In Colombia and the Dominican Republic, the educational differential in contraceptive use decreased substantially because of the much larger growth in contraceptive prevalence among women with little or no education. Although DHS data reveal that the educational differential in current use is still large, the contrast between the extreme education groups has diminished from 45 percentage points to 22 points in Colombia and from 37 to 19 points in the Dominican Republic. In Ecuador and Peru, however, the size of the educational differential in use-levels has been approximately maintained, even though current use rose consistently between the two surveys. In the latter two countries, contraceptive prevalence among women with no education has remained less than 20 percent, whereas it rose to over 60 percent among women with 10 or more years of schooling. In Ecuador, the large decline in TFR among uneducated women is not consistent with the small change in contraceptive prevalence among those women. In general, however, the education subgroups that experienced relatively large decreases in fertility also experienced large changes in contraceptive use.

Overall differentials by education in the proportion of a woman's reproductive years spent with a young child are large, as can be seen in the third panel of Table 2. At current fertility levels, uneducated women in all four countries spend nearly twice as much time, on average, caring for a young child as do those with 10 or more years of schooling. Within education subgroups, there has been remarkably little decline since the WFS in this measure, except among those with three or fewer years of education; the result has been only a small decrease in the size of the education differential, except in Peru, where the gap widened slightly.

At the ages when the proportion of women with a young child is highest (usually 25–29 or 30–34), at least 80 percent of women with no education have a child under six; this percentage rarely rises as high as 60 percent among women with 10 or more years of schooling (not shown). Within education subgroups, these peak levels showed little or no decline between the WFS and the DHS, although for the sample as a whole, there was usually some decline within the peak age-groups (Table 3). Decreases in the percentage of women with a young child were generally greatest at ages over 35. This pattern contrasts with those seen in changes in age-specific fertility rates, which generally declined greatly in the age-groups between 20 and 45. In Colombia and Ecuador, these declines were, in absolute terms, nearly as large at the ages of peak fertility as at ages 30–39, although the percentage decline was greatest among older women. Presumably, the decline in age-specific rates among younger women has had an impact on the need for child care, but its main effect in the earlier reproductive years may have been to reduce the proportion of women who have two or more young children to care for at the same time.

Highly educated women tend to remain single longer than women with less education; when the extreme education groups shown in Table 2 are compared, we see that educated women can expect to have been single for 5–8 years longer by age 50 than is typical for women with no education. Although the educational differential in this aspect of marriage did not change in a consistent manner between the WFS and DHS, it is notable that in all four countries, there was a trend toward earlier or more universal marriage within most education groups.

The size of educational differentials in

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*Trends in the TFR among Colombian and Dominican women with a postsecondary education should not be taken at face value because the WFS rates were based on fewer than 100 women.

Table 3. Percentage of currently married women aged 15–49 with a child under six, and fertility rate, by age-group, according to country and survey

Age-group	Colombia			Dominican Republic			Ecuador			Peru		
	WFS	DHS	% diff.	WFS	DHS	% diff.	WFS	DHS	% diff.	WFS	DHS	% diff.
% of women with a child under six												
15–19	11	10	0	15	13	–7	13	13	0	10	10	0
20–24	53	49	–8	58	51	–12	54	52	–4	46	46	0
25–29	67	64	–4	72	67	–8	72	72	–1	69	69	0
30–34	65	59	–8	70	59	–16	70	67	–6	73	67	–8
35–39	51	43	–14	59	39	–36	60	51	–15	64	56	–14
40–44	38	25	–32	35	24	–31	45	36	–20	48	38	–21
45–49	19	11	–42	17	13	–24	20	19	–5	22	24	9
Fertility rates (per 1,000) over 5 yrs. preceding the survey												
15–19	101	78	–22	123	104	–15	103	91	–12	84	83	–1
20–24	230	181	–21	286	212	–26	237	216	–9	237	198	–16
25–29	221	171	–23	265	197	–26	262	213	–19	262	208	–21
30–34	172	121	–30	233	128	–45	200	153	–24	242	178	–26
35–39	130	79	–39	166	80	–52	161	109	–32	171	135	–21
40–44	62	30	–52	54	35	–35	83	62	–25	92	70	–24
45–49	23	9	–61	15	7	–53	17	23	35	26	19	–27

Sources: See reference 16; and special tabulations.

fertility preferences (see Table 2) depends on which indicator is examined. The two purely attitudinal measures shown in the table—the desire to stop childbearing and the personal ideal (or preferred) family size—suggest that educational differentials in fertility preferences are rather small. A third indicator, the "wanted TFR," gives the contrary impression (not shown). All three measures will be discussed here, although trends can be examined only for the first two measures because a comparable wanted TFR is not available by education from the WFS. However, even though the main focus of this article is on trends, to omit entirely the third measure of preferences would leave the impression that the evidence pertaining to preferences is more straightforward than is genuinely the case.

Once current family size is taken into account, desire to stop childbearing varied only slightly by education in both surveys.[*] Between surveys, both desire and (in most cases) the preferred number of children changed substantially for all education subgroups. Declines in the preferred number of children were greatest among uneducated women, yet at both times, educational differences in the preferred number were much smaller than differences in actual fertility rates. Among women with no education or only primary schooling, the TFR substantially exceeded the preferred number of children; among those with a secondary or university schooling, the TFR was close to (and sometimes below) the reported ideal number of children.

The TFR can be divided into "wanted" and "unwanted" portions. Here, the unwanted portion comprises the births about which the mother reported, at the time she became pregnant, that she did not want to have any more children; the wanted TFR comprises all other births, including births that were wanted later than they actually occurred. Figure 3 (page 12) shows educational differences in wanted and unwanted components of the TFR and, for the sake of comparison, educational differences in ideal family size. Both the unwanted and the wanted TFRs are substantially higher among the uneducated than among the highly educated, although unwanted fertility has not been eliminated even among the latter. In Peru, the unwanted TFR was 0.7 births per woman among those with a secondary education and 0.5 births per woman among those with a higher education.

It is also noteworthy that among the uneducated women, wanted TFRs exceed the number of children the women reported as ideal for themselves, while among the highly educated, wanted TFRs consistently fall below the personal ideal. Since the TFR is a period measure (based on fertility behavior over the previous five years only), the finding does not necessarily mean that highly educated women will in the end fall short of their preferred family size; they may merely have postponed wanted births, with the wanted TFR thus being misleadingly low. However, the independent appearance of this pattern in all four countries must raise the suspicion that the result is not purely a reflection of changing birth timing, coincidentally affecting rates for the period immediately before the surveys.

Apart from the period effect just mentioned, a number of factors might cause the wanted TFR to differ substantially from the average ideal family size within an education group. The following two hypothesized effects could contribute to this differential.

First, some women may choose not to have children they would have desired had their marital and other social and economic circumstances been more favorable.[†] This option is open more to women in certain subgroups, such as the highly educated, in which successful use of birth control is well established. Groups that do not practice contraception can be expected to have not only a larger number of unwanted births but also many births that occur sooner than desired. Mistimed births are in fact common in these countries: Overall, children wanted later than when they were born made up between 22 and 35 percent of births in the year before the DHS surveys.[16] It has been proposed that once fertility control is well established, many such births may never occur; for some women, the favorable circumstances that would lead to a planned birth might never materialize.[17] In this way, wanted TFRs could fall below the personal ideal number of children, and the dependence of this mechanism on successful contraceptive practice could explain the existence of larger education differentials in

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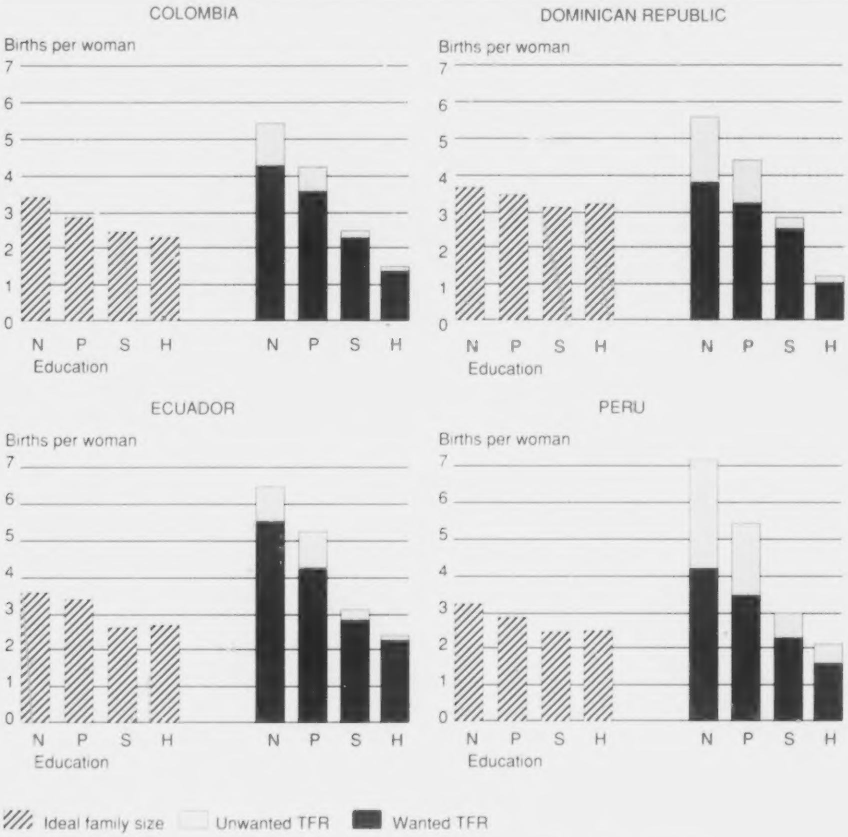
[*] For both surveys and for all four countries, the education-specific percentages of women who wanted no more children (or were sterilized) were adjusted for differences in the number of living children (including current pregnancies), using the family-size distribution of the Colombia DHS data as a standard. The adjustment procedure, which was based on coefficients from multiple classification analysis, produced results very similar to those of direct standardization, but had the additional advantage for the components-of-difference analysis that the education-weighted, adjusted percentages are consistent with the overall mean proportion wanting no more children, standardized on the Colombia DHS family-size distribution (which is shown in Table 1).

[†] Some women are also physically unable to have all the children they would like to have. While this will tend to make the wanted TFR lower than the average personal ideal number of children, it is not obvious that this effect would show a sharp differential by education, which is the primary concern of this discussion.

Figure 3. Education differences in ideal family size, wanted TFR and unwanted TFR, DHS data



Note: N = no education; P = primary education; S = secondary education; H = higher education

Sources: see reference 16.

wanted TFR than in purely attitudinal measures.

Second, both wanted TFR and personal ideal family size may be subject to an upward bias because some women are unwilling to state that they would have preferred fewer children than they have. However, this pressure might be less for the question regarding ideal size, which was deliberately phrased in a hypothetical fashion ("If you could go back to the time you did not have any children . . ."). In contrast, to divide the TFR into wanted and unwanted portions requires information on the woman's desire for each specific birth over the preceding five years. A bias against stating that births were unwanted would lead to an overestimation of women's wanted TFR and an underestimation of their unwanted TFR, with the greatest impact occurring among those who control fertility the least (such as the uneducated). Thus, an unwillingness to label specific births as unwanted might result in the appearance of a greater educational difference in wanted fertility than is actually the case.

Although we cannot at present be certain of the reasons for the different patterns exhibited by the three indicators of fertility preferences, we should note that there is no disagreement between the measures about whether fertility is currently higher than women prefer: The data for both ideal size and wanted TFR indicate that the level of unwanted fertility remains substantial among women with little or no education.

Contribution to Fertility Change

When educational attainment increases, a decline in aggregate fertility can be anticipated, even if behavior within education groups is unaltered, because of the decrease in the proportion of the population with the least education, who have the highest fertility. For fertility and many other variables, this direct effect of changing educational composition sets a lower limit to the change that can reasonably be expected over the decade between the WFS and the DHS. Yet it is not immediately obvious how important this compositional effect has been, or how heavily the fertility decline has depended on changing behavior within educational groups. At the end of the demographic transition, lower fertility is expected in all social strata, even though fertility differentials may persist.

The separate effects of changing educational composition of the population and changing rates within education categories can be quantified through the components-of-difference technique, an extension of direct standardization. In Table 4, the total amount of change between the WFS and the DHS in several rates and proportions is broken into three parts—the rates component, the education component and the interaction component:*

- The change "due to rates" is the amount of change that would have occurred, given the actual changes in education-specific rates, if the education distribution had remained as it was in the WFS.
- The change "due to education" is the amount of change that would have occurred, given the actual changes in educational distribution between the surveys, if the rates within education categories had remained as they were in the WFS.
- The interaction column in Table 4 represents the difference between the total change that actually occurred and the sum of the two other components. The interaction term is zero if education-specific rates changed by the same amount in every education group, while a large interaction term signals that the change across groups was far from equal. In this table, the sign of the interaction term is usually opposite that of the rates component, because the greatest amount of change has taken place within the lowest education groups, which became less predominant over time. The interaction term is usually by far the smallest component, although exceptions can occur when within-category changes in rates vary greatly in size or when these changes are erratic.

The observed change in the distribution of women by education would in most

*$(R_{DHS} - R_{WFS}) = (\sum_i DR_i Ed_{i(WFS)}) + (\sum_i R_{i(WFS)} DEd_i) + (\sum_i DR_i DEd_i)$, where R_{it} is the rate or proportion for education group i at time t (t = WFS or DHS), Ed_{it} is the proportion of the population in education group i at time t (with $\sum_i Ed_{it} = 1$), DR_i is equal to $R_{i(DHS)} - R_{i(WFS)}$ and DEd_i equals $Ed_{i(DHS)} - Ed_{i(WFS)}$. For the synthetic-cohort measures (i.e., TFR, number of years spent single and percentage of reproductive years spent with a child under six), this calculation was performed for each age-group and the results were aggregated over age, following the general procedure for calculating each indicator.

Table 4. Change in selected rates and percentages between WFS and DHS, and degree to which such change is related to shifts in the educational composition of the population or to shifts in rates within education groups, by country

Variable and country	Survey			Change due to:			% of change due to:			
	WFS	DHS	Abs. change	Rates	Education	Interaction	Rates	Education	Interaction	Total
TFR (for five years preceding survey)										
Colombia	4.7	3.3	−1.4	−1.0	−0.6	0.1	69	40	−9	100
Dom. Rep.	5.7	3.8	−1.9	−1.4	−0.8	0.4	76	44	−20	100
Ecuador	5.3	4.3	−1.0	−0.7	−0.5	0.1	67	45	−13	100
Peru	5.6	4.5	−1.1	−0.3	−0.7	0.0	29	67	4	100
% of currently married women currently using a method										
Colombia	43	65	22	20	5	−3	90	22	−11	100
Dom. Rep.	32	50	18	16	6	−3	88	31	−19	100
Ecuador	34	44	11	8	4	−1	73	36	−10	100
Peru	31	46	14	7	7	0	49	49	2	100
% of reproductive years spent with a child under six*										
Colombia	43	37	−6	−3	−4	1	46	68	−13	100
Dom. Rep.	47	38	−9	−5	−6	2	56	72	−28	100
Ecuador	48	44	−4	−1	−3	1	31	87	−18	100
Peru	47	44	−3	2	−4	0	−49	137	12	100
No. of years spent single before age 50*										
Colombia	24.6	24.7	0.1	−0.9	0.8	0.2	†			
Dom. Rep.	21.0	21.9	0.9	−0.5	1.8	−0.4	−56	200	−44	100
Ecuador	23.8	22.9	−0.8	−1.5	0.6	0.1	172	−64	−7	100
Peru	24.4	24.2	−0.2	−1.2	1.0	0.0	†			
% wanting no more children‡										
Colombia	55	70	15	15	0	−1	102	3	−5	100
Dom. Rep.	46	64	18	18	1	−1	100	4	−4	100
Ecuador	48	62	14	13	1	−1	98	10	−8	100
Peru	52	68	17	16	1	0	94	7	−1	100
Mean no. of children preferred										
Colombia	3.5	2.7	−0.8	−0.7	−0.1	0.0	86	18	−4	100
Dom. Rep.	4.3	3.4	−0.9	−0.8	−0.2	0.1	91	17	−8	100
Ecuador	3.5	3.1	−0.5	−0.4	−0.1	0.0	82	27	−9	100
Peru§	3.8	2.9	−0.9	−0.8	−0.2	0.0	87	18	−5	100

*Synthetic cohort estimate. †Overall change was less than 0.5 year.

‡Standardized on the family-size distribution of the Colombia DHS survey. Base is currently married fecund women for WFS, currently married for DHS.

§Based on ever-married women.

Note: The education classification used here is 0 years, 1–3 years, 4–6 years, 7–9 years and ≥10 years, except for TFR and desired family size in Colombia, the Dominican Republic and Ecuador (which were none, primary, secondary and university) and for TFR in Peru (which was 0 years, 1–3 years, 4–6 years and ≥7 years). Because of rounding, component figures may not sum to the total.

cases have led to a substantial change in fertility and the other variables considered, even if education-specific rates had remained constant. As can be seen in Table 4, distributional changes alone would have both decreased the TFR by 0.5–0.8 children per woman (anywhere from 40 to 67 percent as large as the changes that actually occurred) and decreased the percentage of reproductive years spent caring for a young child by 3–6 percentage points (equivalent to approximately 1–2 years). Except in Peru, the "rates" component of change in the TFR is larger than the education component. Changes in rates within education groups alone would have produced a decline of between 0.3 and 1.4 children per woman.

Improvements in overall education alone would have raised contraceptive prevalence by 4–7 percentage points; changes in education-specific contraceptive prevalence rates, on the other hand, would have produced an increase of 7–8 percentage points in Ecuador and Peru and 16–20 points in Colombia and the Dominican Republic, even if the overall educational level had not increased. The latter changes amount to 73–90 percent of the observed change, except that in Peru the increase in contraceptive practice within educational groups was relatively modest, while the growth in educational attainment was the greatest among the four countries. Improved educational attainment in Peru accounted for about half of the overall rise in prevalence.

As was noted earlier, the decline in the percentage of a woman's reproductive years spent with a young child was less pronounced, proportionately, than was the decline in the TFR. Increased education typically contributed more to the overall change than did changes within education categories in the proportion of time spent with a child younger than six. Although, as was shown in Table 2, there was actually a small net increase within education categories in the amount of time that Peruvian women spent raising a young child, the time so spent by the population as a whole declined modestly (by three percentage points), because the effect of increased education more than compensated for the change in rates within subgroups.

Except in the Dominican Republic, there was little change in the timing of marriage, as measured by the expected number of years spent single (shown in Tables 2 and 4). Considering only the increase in education, the expected amount of change in time spent single amounts to between 0.6 years (in Ecuador) and 1.8 years (in the Dominican Republic). In every case, the actual amount of the increase was smaller than would have been expected from the observed improvement in education; that is, there was a modest trend toward earlier or more nearly universal marriage within most education groups (see Table 2), enough to decrease the amount of time spent single by 0.5–1.5 years, if the educational distribution had remained constant.

The percentage of women intending to stop childbearing increased by 14–18 percentage points between the surveys, after introduction of controls for current family size. Almost all of this change occurred within education subgroups: The changing educational distribution can account for only about one percentage point of the overall increase. The decline in preferred family size expected from a change in the educational distribution is also small (only 0.1–0.2 children per woman); in contrast, a decline in the TFR of 0.5–0.8 children per woman can be attributed to increases in education alone. Since educational differentials in these two measures of preferences are small, even the pronounced increase in educational attainment that has occurred in these countries has not had much influence on fertility desires.

For all the variables considered, the amount of variation expected as a result of change in the educational distribution is usually smallest for Ecuador and largest for either the Dominican Republic or Peru. The main reason is simply that the increase in educational attainment between the WFS and the DHS was smallest in Ecuador (partly because of the short period of time between surveys), while it was greatest in the Dominican Republic and Peru.

Conclusions

A woman's education exerts a strong influence on most aspects of her demographic behavior examined in this study. By the time of the DHS, the average woman of reproductive age had completed roughly seven years of schooling (except in Colombia, where women averaged six years). In all the countries, educated women marry later, have fewer children (and therefore spend fewer years caring for young children not yet of school age) and are much more likely to practice modern contraception. In all four countries, these educational differentials were extremely large in the past. Over the last 10 years, educational differentials in fertility have narrowed in Colombia, the Dominican Republic and Ecuador, as the least educated women experienced the most rapid fertility decline and the greatest increase in contraceptive use. Nonetheless, the differentials remain large, both absolutely and in comparison with differentials observed in other developing regions.

In all four of these countries, the educational attainment of adult women is increasing rapidly enough to produce an important amount of fertility decline, simply by increasing the proportion of women who have reached the higher levels of education. In an analysis of the components of difference between the two surveys, improvements in education were found to explain 40–67 percent of the decline in fertility. However, the fertility declines that have occurred within educational categories, particularly among the least educated women, have been impressive. In Colombia and the Dominican Republic, both of which had strong family planning programs during this period, 69 and 76 percent, respectively, of the decline in the TFR between the two surveys can be explained by declines within educational groups; decreases within educational groups accounted for an equally large share of the decline in Ecuador, even though the family planning program there is considered to be weak. On the other hand, in Peru, also known to have a weak program, education accounted for 29 percent of the overall change. It is clear that fertility change in Latin America is now transcending traditional economic and social class divisions.

Over the decade, women's preferred number of children has declined at all levels of education. The assessment of fertility desires and their relation to actual behavior remains a difficult matter, and different indicators of preferences lead to somewhat different conclusions. However, all available indicators show that various educational groups differ considerably less with respect to fertility preferences than with respect to actual fertility. Because of that, improvements in the educational distribution have played a relatively minor role in explaining the overall shift toward smaller family-size preferences. Other changes over the last 10 years affected the perceived costs and returns of having children, and thus have probably contributed more to the substantial decline in fertility desires. While all four countries have suffered economic setbacks in the early 1980s as a result of the global financial crisis, educational enrollment has continued to rise through the decade. Given an environment of economic stagnation and rapidly rising educational aspirations, the perceived costs of childbearing may be rising among all social classes as educational opportunities broaden. Nevertheless, despite the fertility declines that have already taken place, the gap between preferred and actual fertility continues to be very wide for the least educated.

Not every indicator examined here changed in the manner usually associated with higher status for women. Although educated women continue to marry substantially later than uneducated women, recent increases in education have not resulted in later marriage overall, except in the Dominican Republic. Indeed, within education subgroups, there is frequently an apparent trend toward earlier or more universal marriage. In addition, the reported proportion of consensual unions increased, even though such unions are less common among educated women. Furthermore, the duration of breastfeeding did not decline, and may even have increased in some countries, even though a decline would have been expected because educated women tend to breastfeed for a shorter duration.

Although in many respects the similarities among the four countries' fertility patterns and trends are more striking than the differences, Peru and Ecuador have TFRs in excess of four children per woman and rates that are 0.5–1.2 children above those in the other two countries. This is primarily because of higher fertility among the least educated women in Peru and Ecuador. Although Peruvian women average nearly seven years of schooling, women with no more than three years of schooling still represent nearly 30 percent of 15–49-year-olds; for these women, fertility rates are still in the range of 6–7 children, about twice as high as the number of children the women say they want.

Steadily rising enrollment rates guarantee that the proportions of women with lesser amounts of education will continue to decline, but poorly educated women will constitute an important part of the childbearing population for the next decade and beyond. Although a substantial degree of fertility decline can be anticipated as a result of continued improvement in the education experience of adult women, very rapid fertility declines will depend as well on changing the behavior of women in particular education subgroups, as was indicated in the components-of-difference analysis of recent change. Indeed, because the fertility levels among highly educated women are already fairly low, fertility trends among less educated women will prove crucial for determining whether a nation's fertility rate will continue to decline at the same rapid pace during the next decade as during the last. Looking toward the future, policymakers and family planning program managers must plan to meet the needs of poorly educated women, for whom unwanted births are still common.

References

1. J. Cleland and G. Rodriguez, "The Effects of Parental Education on Marital Fertility," *Population Studies*, **42**:419, 1988; and S. Cochrane, *Fertility and Education: What Do We Really Know?* The World Bank, Washington, D.C., 1979.

2. United Nations (UN), *Fertility Behaviour in the Context of Development: Evidence from the World Fertility Survey*, New York, 1987; and M. B. Weinberger, "The Relationship Between Women's Education and Fertility: Selected Findings from the World Fertility Surveys," *International Family Planning Perspectives*, **13**:35, 1987.

3. UN, 1987, op. cit. (see reference 2).

4. M. B. Weinberger, 1987, op. cit. (see reference 2).

5. UN, 1987, op. cit. (see reference 2); J. Cleland and G. Rodriguez, 1988, op. cit. (see reference 1); and S. Cochrane, 1979, op. cit. (see reference 1).

6. S. H. Preston, "Estimation of Certain Measures in Family Demography Based upon Generalized Stable Population Relations," in J. Bongaarts, T. K. Burch and K. W. Wachter, eds., *Family Demography: Methods and Their Application*, Clarendon Press, Oxford, 1987, p. 40.

7. J. Bongaarts and R. G. Potter, *Fertility, Biology, and Behavior*, Academic Press, New York, 1983, pp. 82–84.

8. R. J. Lapham and W. P. Mauldin, "Family Planning Program Effort and Birthrate Decline in Developing Countries," *International Family Planning Perspectives*, **10**:109, 1984; and W. P. Mauldin and R. J. Lapham,

(Continued on page 28)

Stalls in the Fertility Decline in Costa Rica And South Korea

As of 1985, the fertility plateau in Costa Rica had lasted about 10 years. Two lulls in Korea were of minimal length, about five years each. That in Costa Rica, however, is already twice as long and may still be continuing.

By Murray Gendell

Summary

Although the total fertility rate declined considerably in Costa Rica and South Korea between 1960 and 1985, both countries experienced stalls in the decline lasting at least five years. Korea experienced two stalls—a plateauing from 1968 to 1972 and a pronounced deceleration in the pace of decline from 1976 to 1981. The Costa Rican stall (a plateau) began in 1976 and had persisted through 1985, when data were last available. The persistence of the Costa Rican plateau appears to be attributable to a desired family size that has remained fairly constant during the period in question, to a national family planning program that has deteriorated since 1976 as a result of political opposition and a lack of government support, and to a lack of improvement in the use of effective methods of contraception, most notably sterilization.

In contrast, Korea's stalls appear to be brief respites after periods of sharp fertility decline. The country is believed to have been able to resume the overall trend toward replacement fertility each time because desired family size has declined rapidly and steadily (an occurrence aided by a weakening in the historical preference for sons); because it continues to field a strong national family planning program; and because sterilization accounts for an increasing proportion of the high contraceptive prevalence level. Abortion is readily available in Korea also, whereas it is not in Costa Rica. Social, ecological and economic differences between the countries may also contribute to their differing patterns of fertility change.

Introduction

Models and projections of the fertility transition in developing countries have assumed an uninterrupted decline in fertility until a low level is reached. Researchers now recognize that this assumption is not always justified.[1] "Stalls" in fertility decline—defined by a plateauing of fertility or a sharp deceleration in the rate of fertility decline that occurs at a point well above the replacement level and that lasts for at least five years—have been observed in a number of developing countries in recent decades.[2]

The assumption of an uninterrupted decline in fertility in the face of such interruptions would clearly lead to an underestimation in the measurement of the rate of population growth, the size of the population and the proportion of young people in the population. It would be useful, therefore, to try to develop models and projections that make provision for possible stalls in fertility decline. That requires making judgments about their timing and duration, a task that is difficult to do with the information currently available. Hence, we need studies that identify when and why they begin and end.

In an earlier report, stalls in fertility decline were identified in Costa Rica and the Republic of Korea in the 1960–1980 period.[3] The total fertility rate (TFR) in Costa Rica fell swiftly between 1960 and 1975, from 7.3 births per woman to 3.8 births.[4] However, as Figure 1 (page 17) shows, it stalled thereafter. In Korea, the TFR declined from 6.0 births in 1960 to 2.7 births in 1980. During that period, the rate plateaued at around 4.3 births from 1968 to 1972 and the pace of decline decelerated sharply from 1976 to 1980, when the TFR crept down from 3.1 births to 2.7 births.[5] Data up to 1980 indicate that stalls of no more than five years occurred in these two countries.

Subsequent data for the 1981–1985 period, however, show that the stall continued for at least 10 years in Costa Rica. It is difficult to shrug off a plateau lasting a decade as a temporary respite after a sharp fertility decline. These data also reveal that South Korea's rapid fertility decline experienced not one but two interruptions on its way to replacement level fertility; both were considerably shorter than the one in Costa Rica. What accounts for the substantial difference in the duration of the stalls in these two countries? This article attempts to answer that question by exploring three possible reasons:

- Korea managed to lower its desired family size more than Costa Rica, thus preventing an early convergence between actual and desired fertility.
- The national family planning program in Costa Rica deteriorated during the course of the stall, thus prolonging it, while the program in Korea was improved, at least partly as a result of its stalls.
- Contraceptive prevalence and effectiveness of the methods used improved more in Korea than in Costa Rica.

The data used in calculating the trends presented in this article vary in source, nature and quality. In brief, the Costa Rican data are based on censuses and on vital statistics, both of which are regarded as reliable. Korean data are somewhat more problematic. Vital registration data have not been adequate, at least until very recently, so census and survey data are used. Problems of comparability, underreporting and fluctuations arising from small sample sizes may result in minor differences among the various estimates derived from these sources.

Desired Family Size

- *Costa Rica.* Desired family size apparently changed little in Costa Rica between the late 1960s and 1976,[6] while the TFR fell by about two children per woman. Table 1 (page 16) presents the trends between 1976 and 1986 in two measures—mean desired family size and wanted TFR. The latter is analogous to the TFR except that the numerator of the age-specific birthrate is lim-

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Table 1. Measures of fertility preference, Costa Rica, selected years

Measure	1976	1981	1986
Mean desired family size*	4.7	4.6	4.3
Total fertility rate†	3.5	3.7	3.6
Wanted total fertility rate‡	2.6	2.8	2.7
Fertility deficit (line 1–line 2)	1.2	0.9	0.7
Fertility excess (line 2–line 3)	0.9	0.9	0.9

*Women aged 15–49 in a union. Equals number of additional children wanted plus the number of living children. Those who said they wanted no more children or were unable to have more were asked how many they would have liked to have.

†All women aged 15–49. Year breakdowns are 1974–1975, 1979–1980 and 1984–1985.

‡All women aged 15–49. This measure is constructed like the TFR except that the numerator of the age-specific birthrate is limited to wanted births.

Sources: **Desired family size**—1976: estimated for those aged 15–49 from L. Rosero-Bixby, *Fecundidad y Anticoncepción en Costa Rica 1981: Resultados de la Segunda Encuesta de Prevalencia Anticonceptiva*, Costa Rican Demographic Association and Westinghouse Health Systems, Columbia, Md., 1981, Table 24; 1981 and 1986: see reference 13, Table 6.4. **Total fertility rate**—1976: see reference 7, Table 2; 1981: calculated from L. Rosero-Bixby (see above), Table 13; 1986: see reference 13, Table 5.6. **Wanted total fertility rate**—1976: see reference 7, Table 2; 1981: calculated from L. Rosero-Bixby (see above), Tables 7, 13, 20 and 43; 1986: see reference 13, Tables 3.2, 4.7, 5.6 and 6.1.

ited to the number of births that women classified as wanted rather than the total number of births.[7] Between 1976 and 1986, the wanted TFR hovered around 2.7.* Desired family size was stable at about 4.6 during the late 1970s, and then apparently declined a little during the early 1980s. Overall, only a slight change, if any, occurred in reproductive preferences.

The difference between the TFR and the wanted TFR indicates that actual fertility exceeded desired fertility by almost one child between 1976 and 1986; thus, the potential for a further decline in the TFR, as measured by this difference, remained constant during the interval. However, the mean desired family size exceeded the TFR during this time period by notably decreasing amounts.† Nonetheless, the wanted TFR provides a better estimate of desired fertility than the usual measure of desired family size;[8] thus, it seems more reasonable to believe that fertility was excessive rather than deficient and to give more credence to the stability of the fertility excess than to the declining fertility deficit. We conclude, therefore, that there was no further convergence between actual and desired fertility after 1976.

- *Korea.* The wanted TFR in Korea cannot contribute much to this analysis because estimates are unavailable for more than one date.‡ The main available measures of reproductive preference from which trends may be discerned are ideal family size; the percentage wanting no more children; and, because of its importance in Korea, son preference. Table 2 shows a steady decline in ideal family size, from about four children per woman in 1967 to half that in 1985.§ Ideal family size provides only a rough approximation of the level of desired family size. However, unless it can be shown that whatever bias is contained in the measure changed substantially over time, these data provide a valid indication of a large decline in desired family size among women in Korea. Moreover, the decline was swift, occurring within 20 years. This is worth noting, because reproductive motivation is usually said to change very slowly.[9]

The next set of data bolsters the contention that a large, rapid decline in desired family size took place in recent decades in Korea. The percentage of married women of reproductive age who did not want more children increased steadily and rapidly between 1968 and 1985, as shown in Table 2. In addition, the increase was much greater proportionately among women who had one or two children than among those with three or four. The proportion of the latter was already fairly large as early as 1967, an indication of the strength of the potential demand for contraceptives only a few years after the establishment of Korea's national family planning program in 1961.

Finally, son preference has historically been very strong in Korea, but there is evidence that it weakened considerably in recent years. In 1976, 61 percent of respondents said that they "must have a son," 11 percent said "a son is better than a daughter" and 28 percent said they would be "satisfied with a daughter even if they had no son." In contrast, 34 percent of 1985 survey respondents said that they had to have a son, while 23 percent preferred a son to a daughter and 43 percent would be satisfied with a daughter.[10]

Table 2. Average number of children considered ideal; and percentage of women of reproductive age who want no more children, by number of living children; Republic of Korea, selected years

Year	Ideal no.	% wanting no more, by no. of living children			
		1	2	3	4
1967	3.9	7	15	55	74
1968	3.9	8	24	54	73
1973	3.1	11	46	73	85
1974	3.0	13	66	86	92
1976	2.7	19	69	88	93
1979	2.7	26	78	93	97
1985	2.0	45	92	98	99*

*Four or more.

Note: The characteristics of the women of reproductive age on whom the above data are based may differ from one survey to the next. Calculations from the Korean National Fertility Survey (1974), for instance, are based on currently married fecund women. Other surveys, however, may be based on all currently married women.

Sources: **Ideal number of children**—1967–1978: see reference 36, Table 21; 1979–1985: N.-H. Cho, 1986 (see reference 28), Table 3. **Women who want no more children**—1967–1979: see reference 36, Table 22; 1985: see reference 28, Table 4.

During the 1960–1985 period, the TFR in Korea dropped precipitously from six children to just over two children. Desired family size also apparently declined. Even if occasional lulls in the decline of desired family size caused convergences between actual and desired fertility, the resulting stalls in the TFR decline clearly did not last long.

Family Planning Programs

- *Costa Rica.* A strong national family planning program existed in Costa Rica in 1972, but by 1982, it was judged to be weak.[11] The annual number of consultations provided by the family planning program increased rapidly from 27,000 in 1968, when the program was established, to 235,000 in 1976. Then the number declined slightly and leveled off at around 225,000 until 1980, the last year for which data are available. Similarly, the number of new users served by the program rose from almost 10,000 in 1968 to 31,000 in 1976, before declining to 20,000 in 1980. Some research then shows a modest increase in users—not all of whom may have been new—to 23,000 in 1981 and 22,000 in 1982.[12]

Sterilizations are not provided by the family planning program but by the Costa

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*There were differences, however, among the surveys in how wanted TFR was measured. Data for 1976 are based on whether or not the last child born in the 24 months preceding the survey was wanted. Data for 1981 and 1986 are based on whether or not the respondents wanted (more) children. A question was asked in each of these surveys on the wantedness of the last child, but these data were not presented by the respondent's age. Also, the 1981 data included those who had been sterilized, but the 1986 data did not. What effect these differences have on the comparability of the data is unclear.

†Desired family size is measured among survey respondents in a union while the TFR refers to all respondents, but there was little intersurvey variation in the percentage of respondents in a union.

‡Robert Lightbourne estimated the TFR at 3.9 and the wanted TFR at 2.5 in 1974 (see: reference 7). Thus, the fertility excess was presumably 1.4, but Lightbourne contended that the excess was underestimated because the wanted TFR had been biased upward.

§Prior to 1960, ideal family size was about five (see reference 36, Table 21).

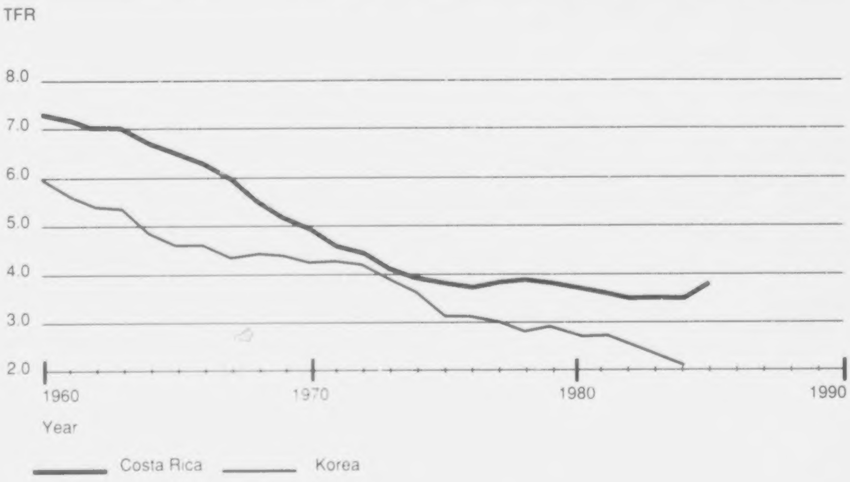
Rican Social Security Institute, and legally, are performed only for medical reasons. However, the procedure became increasingly popular up to 1975, when considerable political opposition led to increased restrictions on its use. Initially, the number of sterilizations declined considerably, but within a few years, rose again to another peak in 1981–1982. Renewed opposition resulted in another decline through 1985, the latest date of available information.[13]

Moreover, complaints about the harmful side effects of some contraceptives led to a court judgment against the family planning program on the grounds that the IUD was an abortifacient. The Supreme Court finally dismissed the case, but as in the controversy over sterilization, the publicity likely raised or reinforced doubts about the use of modern contraceptives.[14]

More importantly, a new, more conservative government, which took office in 1978, modified family planning policy. The National Population Council was replaced by a six-member interministerial organization, the National Commission for Population Policies. Only one member of the commission seemed concerned with population issues, and at least one member was considered pronatalist. The commission recognized family planning as a right, independent of any demographic objectives that might be sought, but otherwise did little.[15] For example, the national family planning program did not make extensive use of the media or mount any major promotional campaigns regarding population. This omission was striking, according to one report, because "Costa Rican authorities believe in government by exhortation," and the country is full of "signs and posters designed to increase civic responsibility and encourage proper behavior."[16]

Summarizing the shortcomings of the national family planning program in the late 1970s, one author observed that "it is not part of an official policy to reduce births, it has not been encouraged by the principal leaders of the country, it does not offer abortion or sterilization, it does not conduct follow-up activities in the home, and the work of training and motivating medical personnel has lost its initial impulse."[17]

Figure 1. Total fertility rate (TFR) in Costa Rica and Korea, 1960–1985



Sources: **Costa Rica**—1960–1980: L. Rosero-Bixby, 1983 (see reference 30), p. 118; 1981–1985: see reference 13, Table 5.7. **Korea**—1960–1980: see reference 36, Table 6; 1981 and 1984: see reference 28, Table 7.

The report on the 1986 Demographic and Health Survey refers to the important problems confronting the national family planning program. It notes difficulties in the distribution of contraceptives, especially the Copper T IUD, and in the effort to integrate the services provided by the social security system with those of the Ministry of Health. (The existing arrangement calls for the social security clinics to provide medical consultations and the Ministry of Health to implement the advice supplied in the consultations.) In addition, the report emphasizes that the strenuous efforts of the Costa Rican Demographic Association, a nongovernmental organization, to keep the national family planning program from deteriorating has not received the "interest and necessary support of the Public Sector."[18]

One may reasonably conclude, therefore, that the government's support of the national family planning program was considerably weaker after 1976 than it was between the program's establishment in 1968 and 1976. Nonetheless, contraceptive prevalence remained at the peak it had reached in 1976, and one wonders how it did so. One possibility is that the private sector's share of contraceptive services expanded. A 1978 survey of women aged 15–44 currently in a union showed that 57 percent of contraceptive users got their method from the government program and 28 percent got it from a private doctor or pharmacy; the remainder used a method such as withdrawal or rhythm that required no source of supplies.[19] In contrast, the Costa Rican government reported in 1984 that among women aged 15–44 currently in a union, only 41 percent of contraceptive users got their method from the public sector, and 59 percent, from the private sector.[20] Whether these data are fully comparable is unclear, but the figures suggest a decline in the public sector.

Another question raised by the weakening of government support is whether there was an increase in the unmet need for contraception. Women with an unmet need for contraception are those exposed to the risk of pregnancy—that is, those in unions, fecund (including the contraceptively sterilized) and not pregnant—who want no more children but are not using an effective contraceptive method. Calculations from data for 1976[21] and 1986[22] seem to indicate an increase in unmet need from 12 percent of exposed women to 17 percent.* Each of the three factors that determine unmet need increased between 1976 and 1986: The proportion of women of reproductive age who are exposed to the risk of pregnancy rose from 82 percent of the sample in 1976 to 84 percent in 1986; the proportion of the exposed who want no more children rose from 52 percent to 60 percent; and the proportion not using effective contraceptives among exposed women who want no more children increased from 29 percent to 33 percent.

The estimates of 12 percent and 17 percent measure only the unmet need for

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*Calculations are based on survey samples of women aged 20–49 and in a union in 1976 and aged 15–49 and in a union in 1986. Whether the difference in reproductive age for the two years affects the results is difficult to judge. The inclusion of teenagers would tend to reduce the relative number of those contraceptively sterilized, but it might also increase the relative number of those fecund and pregnant. Calculations of unmet need in both years are limited to women who used effective methods (i.e., the pill, injectables, IUDs, condoms, diaphragms, spermicides and sterilization), because that is all the published data for 1986 permit.

Table 3. Percentage of women in a union aged 15–49 practicing contraception, by method, Costa Rica, selected years

Method	1976	1981	1986
All methods	**67**	**65**	**69**
Sterilization (male and female)	16	18	17
Pill, IUD, injectables	30	28	28
Condom, vaginal methods	11	10	13
Rhythm, Billings method, withdrawal, folk methods	10	9	11

Source: See reference 13, Table 4.5.

contraception to limit births and do not measure unmet need associated with spacing births. Surveys conducted in 1981 and 1986 indicate that unmet need for contraception for spacing births may be much greater than that for limiting births. Among women in unions who had had a pregnancy during the five years preceding the surveys, 37 percent in 1981 and 40 percent in 1986 said that their last pregnancy was not wanted.[23] In each year, 65 percent of those who had had an unwanted pregnancy said that the unwanted pregnancy was mistimed, and 35 percent said that they had wanted no more children. In this analysis, the relevant issue is the trend, not the level, of unmet need, and the identical proportions in each year indicate no change in unmet need related to spacing between 1981 and 1986. What happened between 1976 and 1981 is not evident.

We conclude that the performance of Costa Rica's national family planning program deteriorated after 1976, mainly (if not solely) because of weaker government support. That levels of contraceptive prevalence and use of effective contraceptives did not change after 1976 suggests that the private sector compensated for the decline in service provided by the public sector, and data support this suggestion. But the compensation was apparently not enough to prevent an increase in the unmet need for contraception to limit births between 1976 and 1986.

- *Korea.* An analysis of Korea's family planning program found it to be strong in both 1972 and 1982.[24] In fact, based on a scoring system developed by the researchers, Korea received a score second only to that given China's family planning program. Because there are major differences in the 1972 and 1982 measures of program effort, scores for the two years are not directly comparable, so whether the program had gotten stronger or was less so could not be determined.

Despite its high rating, the program was far from perfect, and its major shortcomings through the early 1970s have been described elsewhere.[25] Nonetheless, the goal of the family planning program from the outset was to reduce the rate of population growth in order to accelerate economic development. This goal has been restated in the country's successive five-year plans, and the program has continually assessed its performance and made major changes to meet the targets for a declining rate of population growth. A summary of this evolution follows.[26]

In the development of Korea's family planning program, the first half of the 1960s has been called the "clinical era," because most programs were clinically oriented. During this period, there was no substructure below the Gun (county) level for providing contraceptive services and information. Family planning programs played a passive role, as clients had to come to program centers.

The second half of the 1960s is called the "field era," and program structure expanded to Eup (town) and Myon (township) levels. Fieldworkers were posted in every Eup, and mobile clinics were organized to take contraceptive services to remote areas. Nonetheless, it was during this period that the first of Korea's fertility stalls occurred. A demographer working with the Korean program at the time attributes the stall to budgetary and other operations problems.[27] In 1968 and 1969, the national family planning program initially received only six months of its budget, the result of a general underbudgeting affecting all sectors of the government. Although the rest of the budget was restored at midyear in both 1968 and 1969, targets for peak spring months had already been cut sharply, and the program was not able to fully recover during the remainder of the year. Other factors such as a reduction of distribution sites in Seoul because of fiscal improprieties at one or more sites may have also played a role. By 1972, better budgets, more family planning workers and more outlets put the program back on track.

The first half of the 1970s has been called the "expansion era," as existing programs increased their coverage and expanded their scope of services. The introduction of female sterilization, for example, added substantially to the program's success. The "reorientation era" arrived in the second half of the 1970s, when there was a growing awareness of the shortcomings of doing more of the same things. The second fertility stall began during this period. Policies designed to increase coverage and contraceptive effectiveness and those designed to improve public information were thought to have reached a point of rapidly diminishing return. Fresh approaches to changing fertility behavior patterns were designed that involved taxation, housing priority and tuition incentives.

The incentives introduced in the 1970s were expanded and formalized in the first half of the 1980s, which may be thought of as the era of comprehensive "incentive and disincentive systems." Programs for loans, housing, education, health care and welfare assistance that were linked to family size were consolidated and expanded.

Moreover, the family planning program has been using a slogan promoting the one-child family since 1981. Among married women aged 15–44, the approval rate for the "one is enough" slogan has increased from about 16 percent in 1982 to 48 percent in 1985.[28]

Contraceptive Prevalence

- *Costa Rica.* Following the introduction of the national family planning program and its subsequent expansion, contraceptive prevalence increased greatly during the late 1960s and early 1970s.[29] By 1976, 67 percent of reproductive-age women in a union were currently using a contraceptive, as Table 3 shows. Subsequent surveys in 1981 and 1986 showed no further significant change in prevalence. Similarly, there was a great increase up to 1976 in the use of effective methods of contraception, but none thereafter.

Another measure of contraceptive effectiveness is the extent to which pregnancies are unwanted. Unfortunately, the available data for 1976 are not comparable with the two later surveys, because of the greater explicitness in the latter's questionnaires about the difference between delaying and stopping childbearing. Consequently, we can ascertain a trend only for the 1980s, and as was noted earlier, these data reveal no change during that period in either the total incidence of unwanted pregnancies or the extent to which the pregnancies were timing or limiting failures. In sum, on the basis of this limited evidence, we conclude that there appears to have been little or no change between 1976 and 1986 in contraceptive effectiveness in Costa Rica.

Other determinants of fertility appear to have had no effect on the fertility stall. Nuptiality patterns, for example, were stable during the period in question. Among women, age at first union (legal and de facto) averaged 21–22 years from 1950 to 1980,[30] and the 1986 survey report indicated no significant change in the median age at first union between 1981 and 1986.[31] In addition, the proportion of women aged 40–49 who had never mar-

Table 4. Percentage of currently married women aged 15–44 practicing contraception, by method, Republic of Korea, selected years

Method	Year '66	'71	'76	'79	'82	'85
All methods	**20**	**25**	**44**	**54**	**58**	**70**
IUD	9	7	11	10	7	7
Pill	1	7	8	7	5	4
Sterilization*	2	4	8	20	28	41
Condom	6	3	6	5	7	7
Other	2	4	11	12	10	11

*Male as well as female sterilization. The latter increased as follows: 1976—4.1, 1979—14.5, 1982—23.0, and 1985—31.6.

Note: Sum of methods does not always equal total because of rounding.

Sources: **1966–1979**—see reference 36, Tables 27 and 29. **1982–1985 and female sterilization**—see reference 28, Table 3.

ried varied only slightly, ranging from eight to 10 percent between 1976 and 1986.[32] It is generally agreed that abortion has had a negligible effect on fertility.[33]

- *Korea.* Prior to the establishment of Korea's national family planning program in 1961, contraceptive practice seems to have been negligible, as indicated by a prevalence rate among married women of reproductive age that was only nine percent in 1964.[34] It increased rapidly thereafter, however, and by 1985, it reached 70 percent, a rate comparable to that of the low-fertility industrialized countries. As Table 4 shows, the IUD and the condom were the predominant methods in the 1960s, but in the early 1970s, the pill supplanted the condom, and it and the IUD accounted for most of the prevalence rate. By 1976, the IUD and the pill had reached the peak of their popularity at levels not much higher than those of 1971; the prevalence rate of both then declined. The method that experienced the greatest rise in prevalence was sterilization (primarily female), which rose to 20 percent in 1979 and 28 percent in 1982, and then accelerated to 41 percent in 1985. Consequently, sterilization went from constituting 10 percent of contraceptive practice in 1966 to 59 percent in 1985.

Table 5. Percentage of currently married women aged 15–44 practicing contraception, by number of children, Republic of Korea, selected years

No. of children	1973	1979	1985
0	3.8	7.0	13.8
1	14.4	20.7	44.7
2	34.6	58.7	82.5
3	46.4	69.0	84.5
4	46.2	68.9	80.1
≥5	42.7	58.5	76.3

Source: see reference 28, Table 3.

There can be no doubt that contraceptive effectiveness increased along with the increase in sterilization. Throughout the period of fertility decline, in fact, not only has contraceptive prevalence and use of effective methods increased, but contraceptive practice has also been initiated at an increasingly early stage of the childbearing cycle, as the data in Table 5 show. In 1973, for example, 35 percent of married women of reproductive age with two children were using contraceptives; in comparison, 83 percent of their 1985 counterparts were doing so. Indeed, by 1985, almost half (45 percent) of women with only one child were practicing contraception.

Further light may also be shed on the lingering influence of son preference. Table 6 reveals that in 1985, women were more likely to be using a contraceptive if they had only a son than if they had only a daughter. Also, they were much more likely to be contraceptive users if they had two children, even if one was a daughter, than if they had only one child. An analysis of sterilization, however, shows that women were much more likely to be using this permanent method if they had only sons than only daughters, especially after having at least two children. Thus, though son preference has weakened, as noted previously, it was still a potent factor in 1985.

The great increase in contraceptive prevalence and the use of more effective methods was paralleled by a steep rise in the use of induced abortion. For example, 13 percent of married women had had an induced abortion in 1966 compared with 53 percent in 1985.[35] Abortion has been much more of a supplement than an alternative to contraceptive practice in Korea throughout the period of fertility decline, however, because of the great increase in the effectiveness of birth control methods.

A large rise in the age at first marriage was a major reason for the fertility decline in Korea during the 1960s, and increasing age at marriage also had a modest effect during the early 1970s. However, variations in nuptiality do not appear to have been a determinant of the interruptions in fertility decline. Among women, the singulate mean age at first marriage as calculated from census data stood at 21.5 in 1960,[36] rose to 23.7 in 1975 and to 24.1 in 1980.[37] Vital statistics data suggest no further rise in the mean age at marriage between 1980 and 1983.[38] Similar changes occurred among men, except that the singulate mean age at marriage stabilized earlier, beginning about 1975.

Table 6. Overall percentage of women practicing contraception and percentage relying on sterilization, by number and sex of children, Republic of Korea, 1985

Number and sex of children	All methods	Sterilization
1 son	51	11
1 daughter	36	6
2 sons	88	63
2 daughters	64	22
1 son and 1 daughter	86	u
3 sons	86	66
3 daughters	66	26

Notes: Source does not state the characteristics of the population to which the rate applies, but it is probably currently married women aged 15–44 years. Though the source does not say so, sterilizations are very likely included in the overall rate; u= unavailable.

Source: see reference 28, Table 5; and see reference 10, Table 7.

Discussion

As of 1985, the fertility plateau in Costa Rica had lasted about 10 years. In Korea, however, the plateauing of the TFR that began in 1968 lasted five years, and the deceleration in the rate of decline of the TFR that began in 1976 lasted five or six years. These two lulls in Korea were of minimal length. That in Costa Rica, however, is already twice as long and may still be continuing.

The interruptions in Korea were short because desired family size continued to drop rapidly to replacement level and contraceptive prevalence and the effectiveness of the mix of methods continued to improve. In addition, the national family planning program had the support of the government and explicitly sought to achieve targeted declines in the birthrate.

In Costa Rica, however, each of these three factors fell short. Desired family size apparently changed little between the 1960s and 1976, whereas the TFR fell swiftly. Thus, the gap between actual fertility and desired family size had narrowed considerably by 1976, but then both measures leveled off, keeping any further convergence from occurring and keeping fertility well above the replacement level. A significant factor in this trend was the deterioration in the national family planning program after about 1976, because of weakening government support and opposition deriving from one or more religious, political and ideological sources.[39] Contraceptive prevalence had reached an impressive level by 1976. After that time, however, there was no further expansion in the relative importance of sterilization to contraceptive practice, and it remained much less used in Costa Rica than in Korea. Although contraceptive prevalence was nearly as great in 1985 in Costa Rica as in Korea, the birthrate was higher in Costa Rica. The virtual absence of abortion in Costa Rica and its considerable prevalence in Korea no doubt contributed to this difference.

These three differences between Costa Rica and Korea may not be the only significant factors in determining the persistence of interruptions in their fertility decline. It is widely asserted, for example, that modernization leads to reductions in desired family size and increases in the use of birth control methods, with subsequent falls in fertility.[40] And modernization, though at a lower level in Korea in 1960 than in Costa Rica, proceeded at a swifter pace in Korea thereafter. Korea's economy, for instance, experienced increases in real per capita income averaging 6.6 percent per year during the 1960–1982 interval, as compared to only 2.8 percent in Costa Rica. Consequently, in 1982, gross national product per capita was $1,430 in Costa Rica and $1,910 in Korea.[41]

Similarly, Korea was less urban than Costa Rica in 1960; 28 percent of its population lived in urban areas versus 37 percent in Costa Rica.[42] But Korea urbanized subsequently at a rate about twice that of Costa Rica. As a result, 65 percent of Korea's population lived in urban areas in 1985, whereas 45 percent of Costa Rica's population did so.[43]

Throughout the 1960s and 1970s, the labor-force participation rate of women was about 75 percent higher in Korea than in Costa Rica, but the pace of increase in this rate was the same in both countries: Ten percent of Costa Rican women participated in the labor force in 1960 and this proportion had grown to 14 percent in 1981; the figures for Korea were 17 percent and 25 percent, respectively.[44] There was, however, a much more rapid increase in the education of women in Korea than in Costa Rica. The proportion of girls aged 12–17 enrolled in secondary school, for example, increased almost sevenfold in Korea between 1960 and 1985 (from 14 percent to 91 percent), while it merely doubled in Costa Rica (from 21 percent to 43 percent).[45]

Korea is also a much more densely settled country than Costa Rica: In 1960, Costa Rica had 24 persons per square mile and Korea had 254 persons per square mile; in 1986, densities had increased to 52 and 420, respectively.[46] Although Costa Rica's rate of population growth between 1960 and 1985 increased the country's density more swiftly than did Korea's, the latter's density was still eight times larger in 1985 than that of Costa Rica. Korea's greater density is likely to have produced a stronger sense of crowdedness, which its very rapid pace of urbanization could well have exacerbated, contributing to a greater desire to limit fertility.

While these social, demographic and economic differences between the two countries provide additional reasons for the observed differences in the general trends in fertility and family planning, they do not help account for the differences in the timing and duration of the fertility stalls. A more detailed and careful analysis of all factors involved will be needed for a definitive judgment about their significance.

A comparison of the duration of two fertility stalls obviously cannot produce any generalizations about stalls. But this comparison does suggest that the rationale and objectives of a national family planning program may be critical determinants of the duration of plateaus and decelerations. A government whose rationale is one of health and human rights is less likely than one that sets demographic targets to make efforts to reduce desired family size, and, to judge by what happened in Costa Rica after about 1975, to satisfy existing demand for birth control. Hence, a longer stall in Costa Rica than in Korea is not surprising, and similar differences in the duration of stalls could occur in other countries under similar conditions.

References

1. Population Reference Bureau, *Population Today*, Dec. 1988, page 3.

2. M. Gendell, *Stalls in the Fertility Decline in Costa Rica, Korea and Sri Lanka*, Staff Working Papers, No. 693, The World Bank, Washington, D.C., 1985.

3. Ibid.

4. Ibid., p. 9.

5. Ibid., p. 39.

6. Ibid., p. 16.

7. R. E. Lightbourne, "Desired Number of Births and Prospects for Fertility Decline in 40 Countries," *International Family Planning Perspectives*, **11**:34, 1985.

8. Ibid., p. 34.

9. Ibid.

10. H. S. Moon et al., "1985 Fertility and Family Health Survey," *1985 KIPH Research Abstract*, Korea Institute for Population and Health, 1985.

11. W. P. Mauldin and R. J. Lapham, "Measuring Family Planning Program Effort in Developing Countries, 1972 and 1982," in N. Birdsall, ed., *The Effects of Family Planning Programs on Fertility in the Developing World*, Staff Working Papers, No. 677, The World Bank, Washington, D.C., 1985, p. 19.

12. D. L. Nortman, *Population and Family Planning Programs: A Compendium of Data Through 1983*, 12th ed., The Population Council, New York, 1985, Table 15.

13. Asociación Demográfica Costarricense, *Encuesta Nacional de Fecundidad y Salud, Costa Rica, 1986*, San Jose, 1987, pp. 46–47.

14. C. F. Gallagher, *Demography and Development: The Lessons of Costa Rica*, Field Staff Reports, No. 16, American University, Washington, D.C., 1980, p. 10.

15. Ibid.

16. Ibid.

17. L. Rosero-Bixby, "Decline of the Birth Rate in Costa Rica," unpublished manuscript, p. 27.

18. Asociación Demográfica Costarricense, 1987, op. cit. (see reference 13), p. 55.

19. "Contraceptive Prevalence Surveys: A New Source of Family Planning Data," *Population Reports*, Series M., No. 5, 1981, Table 15.

20. D. L. Nortman, 1985, op. cit. (see reference 12), Table 15.

21. J. Brackett, "Family Planning in Four Latin American Countries—Knowledge, Use and Unmet Needs: Some Findings from the World Fertility Survey," *International Family Planning Perspectives*, **4**:116, 1978, Table 9.

22. Asociación Demográfica Costarricense, 1987, op. cit. (see reference 13), Tables 6.1 and 6.8, annex, and p. 64.

23. Ibid., pp. 62–63.

24. W. P. Mauldin and R. J. Lapham, 1985, op. cit. (see reference 11), p. 19.

25. P. J. Donaldson, "Evolution of the Korean Family Planning System," in R. Repetto et al., eds., *Economic Development, Population Policy and Demographic Transition in the Republic of Korea*, Harvard University Press, Cambridge, Mass., 1981.

26. H. S. Moon, K.-K. Ro and S. Y. Lee, *Study on Impact and Efficiency of Family Planning in Korea*, Korea Institute for Population and Health, 1986, pp. 13–14.

27. D. Smith, School of Public Health, The University of Texas Health Science Center at Houston, personal communication, Sept. 28, 1988.

28. N.-H. Cho, "Current Status and Future Directions of the Population Control Policy in Korea," *Journal of Population and Health Studies*, Vol. 6, No. 1, Korea Institute of Population and Health, 1986, p. 139.

29. M. Gendell, 1985, op. cit. (see reference 2), pp. 18–27.

30. M. Gendell, 1985, op. cit. (see reference 2), p. 13; and L. Rosero-Bixby, "Determinantes de la Fecundidad en Costa Rica," *Notas de Población*, No. 32, 1983, p. 99.

31. Asociación Demográfica Costarricense, 1987, op. cit. (see reference 13), Table 3.3.

32. Ibid.

33. M. Gendell, 1985, op. cit. (see reference 2), p. 28.

34. P. J. Donaldson, 1981, op. cit. (see reference 25), Table 63.

35. M. Gendell, 1985, op. cit. (see reference 2), Table 17; and N.-H. Cho, 1986, op. cit. (see reference 28), Table 3.

36. L.-J. Cho, F. Arnold and T. H. Kwon, *The Determinants of Fertility in the Republic of Korea*, Report No. 24, Committee on Population and Demography, National Academy of Sciences, Washington, D.C., 1982, p. 84.

37. S. K. Kong and A. J. Cho, "Fertility Decline and Family Life Cycle in Korea," *Journal of Population and Health Studies*, **5**:30, 1985.

38. Ibid., Table 3.

39. J. M. Stycos, "Sterilization in Latin America: Its Past and Its Future," *International Family Planning Perspectives*, **10**:58, 1984.

40. R. A. Easterlin, "Modernization and Fertility: A Critical Essay," in R. A. Bulatao and R. D. Lee, eds., *Determinants of Fertility in Developing Countries*, Vol. 2, Academic Press, New York, 1983; and H. Oshima, "The Industrial and Demographic Transitions in East Asia," *Population and Development Review*, **9**:583, 1983.

41. The World Bank, *1984 World Development Report*, Oxford University Press, New York, 1984, pp. 218–219.

42. United Nations, *1986 Demographic Yearbook*, New York, 1988, Tables 3 and 6.

43. Ibid.

44. The World Bank, *World Tables, Third Edition, Vol. II, Social Data*, Johns Hopkins University Press, Baltimore, 1983, pp. 24 and 51.

45. Ibid.; and ——, 1988 *World Development Report*, Oxford University Press, New York, 1988, p. 281.

46. The World Bank, 1983, op. cit. (see reference 44), pp. 24 and 51; and United Nations, 1988, op. cit. (see reference 42), Table 3.

Resumen

Si bien la tasa global de fecundidad decreció considerablemente entre 1960 y 1985 en Costa Rica y Corea del Sur, en ambos países se ha producido estancamientos en este descenso de por lo menos cinco años de duración. Corea lo tuvo de 1968 a 1972, al que se añadió una pronunciada reducción de la velocidad del descenso entre 1976 y 1981. El de Costa Rica comenzó en 1976 y se mantenía aún en 1985, cuando se obtuvieron los últimos datos disponibles. En este país, la persistencia del nivelación puede atribuirse al hecho de que el número ideal de hijos ha permanecido realtivamente constante durante el periodo en cuestión, al programa nacional de planificación familiar deteriorado a partir de 1976 como producto de oposición política y por falta de apoyo oficial, y a una ausencia de mejoramientos en el empleo de métodos eficientes, particularmente la esterilizacion.

Los estancamientos producidos en Corea, en cambio, parecen breves respiros tras períodos de marcada disminución de la fecundidad. Se estima que el país ha podido reanudar cada vez su tendencia general al nivel de reemplazo debido a que la cantidad de hijos considerada ideal se ha reducido en forma rápida y sostenida (a lo que ha coadyuvado un debilitamiento de la histórica preferencia por los hijos varones), a que se sigue promoviendo un firme programa nacional de planificación familiar, y a que la esterilización representa un porcentaje cada vez mayor del alto nivel de prevalencia anticonceptiva. En Corea, el aborto resulta, además, fácilmente accesible, mientras que no en Costa Rica. Es posible que las diferencias sociales, ecológicas y económicas entre ambos países contribuyan asimismo a la distinta evolución de la fecundidad en cada uno.

Résumé

Bien que l'indice synthétique de fécondité ait décliné considérablement entre 1960 et 1985 au Costa Rica et en République de Corée, les deux pays ont vu ce déclin s'immobiliser pendant des périodes d'au moins cinq ans. La République de Corée a subi deux périodes d'arrêt entre 1968 et 1972 et entre 1976 et 1981. La stagnation au Costa Rica a commencé en 1976 et a persisté jusqu'en 1985, date des dernières données disponibles. La persistence de ce plateau au Costa Rica semble être attribuable au nombre idéal d'enfants fixé à quatre ou plus pendant cette période, à un programme de planning familial qui s'est détérioré depuis 1976 du fait de l'opposition politique et du manque d'appui gouvernemental, et à un manque d'amélioration quant à l'usage des méthodes efficaces de contraception, en particulier la stérilisation.

Par contre, l'immobilisation observée en Corée ne semble consister que de deux brèves interruptions suivant des périodes pendant lesquelles la fécondité a connu une réduction frappante. A chaque crise, le pays s'est trouvé capable, paraît-il, de reprendre la tendance générale vers un taux de remplacement, du fait que la taille de la famille a décliné rapidement et de façon constante (grâce, en partie, à l'atténuement de la préférence historique pour les fils), du fait que le gouvernement continue à subventionner un programme vigoureux de planification familiale, et du fait que la stérilisation prend une place de plus en plus marquée dans le fort taux de prévalence contraceptive. L'avortement est facilement accessible en Corée, alors qu'il ne l'est pas au Costa Rica. Les différences sociales, économiques et écologiques sont également susceptibles de contribuer aux modèles différents d'évolution démographique dans ces deux pays.

Sterilization Regret in Sri Lanka: A Retrospective Study

Regret is not associated with the amount a woman receives for undergoing sterilization. Women who had received higher payments were no more likely than those who had received lower amounts to regret having been sterilized.

By Dennis Hapugalle, Barbara Janowitz, Sharon Weir, Deborah L. Covington, Lynne Wilkens and Celene Aluvihare

Summary

A study of 817 Sri Lankan women who underwent sterilization between 1980 and 1983 indicates that 14 percent subsequently regretted their sterilization—that is, they either said they wanted to have another child or they wished they had been sterilized later or not at all. The most important determinants of regret were not having a child of each sex at the time of the operation, being married fewer than five years, being under age 25, having two children or fewer, not having control over the sterilization decision, having a husband who opposed the sterilization and having a child die subsequent to the procedure.

Introduction

In 1980, the government of Sri Lanka initiated a number of changes in its national family planning program to improve citizens' knowledge of family planning and to facilitate their access to contraceptive services. These changes included increasing funding for family planning service programs, training medical personnel to perform sterilizations, upgrading hospitals to enable them to provide sterilizations and paying medical teams a small amount for each sterilization performed—35 Rupees (Rs)* for each vasectomy and Rs 65 for each tubal ligation. In addition, the government began providing a monetary payment and leave benefits to sterilization acceptors, a policy that continues today.[1]

The program played a key role in improving access to sterilization services in Sri Lanka. In 1980, the number of sterilizations was triple that of the previous year (112,926 vs. 35,643). Further, the proportion of currently married women who had undergone sterilization increased from nine percent in 1974 to 17 percent in 1982.[2]

As Table 1 shows, the number of sterilization acceptors rose dramatically in late 1980 and early 1981, a period coinciding with the increase from Rs 100 to Rs 500 in the amount of money the government paid to men and women who underwent sterilization. The drop in the number of acceptors beginning in early 1981 coincided with a reduction in the payment to Rs 200. The number of sterilizations began to rise in January 1982, when the payment was increased to Rs 300, and grew again when the payment was increased to Rs 500 in June 1983.[3]

The issue of concern is whether the increased availability of sterilization services enabled men and women to meet a previously latent demand for sterilization, or whether the amount of money paid to acceptors influenced the decision to undergo sterilization and later resulted in regret.

According to the Population Division of the Ministry of Plan Implementation in Sri Lanka, the payment is intended to "reimburse any expenses incurred or income lost in connection with the sterilization, such as wages lost, cost of travel, food, purchase of clothing, etc., and is not in any way intended to coerce or induce a person to accept sterilization."[4] Moreover, the government has taken steps to prevent the payment from becoming a financial inducement to sterilization. People with fewer than two living children and those who are not married cannot be reimbursed for undergoing sterilization. In addition, government policy requires that prospective acceptors be informed of the irreversible nature of the procedure and counseled about other methods; medical staff must obtain the client's informed consent before performing a sterilization. Since 1980, Community Development Services (CDS) has been offering sterilizations at its family planning clinic in Colombo, the capital city, and at its mobile clinics outside of Colombo. CDS also maintains seven regional offices, through which area managers, counselors and voluntary health workers educate women about sterilization. According to its records, CDS has provided information about sterilization to over 10,000 women in areas outside Colombo. Although CDS is the largest nongovernmental provider of sterilization services, only a small proportion of all Sri Lankan sterilizations are performed in its facilities: In 1982, when its share of sterilizations was highest, CDS performed five percent of all female sterilizations, while the government provided over 90 percent.

To determine whether payments have served as a financial inducement to female sterilization and whether that inducement

Table 1. Amount of money paid to sterilization acceptors and number of sterilizations performed per month, by payment period, Sri Lanka, 1980–1985

Payment period	Payment*	No. of sterilizations
<1980	0	1,700
(1) Mar. 1980–Sept. 1980	100	3,800
(2) Oct. 1980–Jan. 1981	500	7,000
(3) Feb. 1981–Dec. 1981	200	3,100
(4) Jan. 1982–May 1983	300	4,000
(5) June 1983–Dec. 1983	500	6,000
1984	500	5,300
1985	500	4,500

*Payments are in rupees; Rs 25 = U.S. $1.

Source: Family Health Bureau, *Annual Report on Family Planning Acceptors in Sri Lanka* (various years), Ministry of Health, Colombo, Sri Lanka.

At the time this article was prepared, Dennis Hapugalle was honorary executive director, Community Development Services, Sri Lanka. Sharon Weir was senior research analyst, Barbara Janowitz was associate director and Deborah L. Covington was senior research analyst in the Program Evaluation Division of Family Health International (FHI), and Lynne Wilkens was associate biostatistician at FHI. Celene Aluvihare was managing director, Marketing Resource Ltd., Sri Lanka. Support for the study upon which this article is based was provided by FHI with funds from the U.S. Agency for International Development.

*Rs 25 = U.S. $1.

might have contributed to regret, CDS asked Family Health International for assistance in carrying out a study to identify the factors associated with long-term sterilization satisfaction and regret and, in particular, to determine whether regret is associated with the amount of payment a person receives for undergoing the procedure. In this article, we describe women's characteristics at the time of sterilization, the proportion who experienced regret, the relationship between payments and regret, and the extent to which background characteristics and poststerilization events are correlated with regret.

The Study

The study sample was drawn from the more than 16,000 women who underwent tubal ligations in a CDS facility between 1980 and 1983. It included urban women (whose sterilizations had been performed at the clinic in Colombo), rural women (whose procedures had been performed at the district hospital in Kalutara) and women living on tea estates* (whose operations had been performed at a clinic in Badulla District). Interviews with these women were carried out in 1985, 2–5 years after the sterilization procedure. We adopted a retrospective study design to compare satisfaction and regret among women at these three sites over the five time periods during which different payment levels were in force. To assess the effect of the change in money payments on regret, the investigators estimated that they would need to complete 100 interviews among women who had undergone sterilization at each of the three sites during each of the five payment periods. Because of the anticipated difficulty of finding women several years after their sterilization, we attempted to draw a sample of at least 150 women from each of the site/payment combinations.

However, services were not available at every site during all of the payment periods. The CDS Suva Sevana Clinic in Colombo began providing sterilizations in March 1981, nearly a year and a half after the government began reimbursing acceptors. Consequently, the Colombo sample was stratified by date of the operation into just three payment periods, with the three subsamples chosen from lists of women sterilized during each time period, using systematic selection with a random start.

The sterilization program began in early 1980 at the rural district hospital in Kalutara. Records of all women sterilized there were obtained by date of operation and the samples chosen by systematic selection with a random start. However, the last payment period could not be included in the analysis because the hospital suspended sterilization services when the payment level rose to Rs 500 in June 1983.

Since 1979, tea estates have supplemented government payments for sterilization, so that estate workers receive Rs 500 per procedure. The estate sample was stratified by date of the operation, even though the payment remained constant throughout the study period. Sterilization services began in Badulla District in March 1981 and terminated on June 1, 1983; consequently, only two comparable time periods are covered. Because relatively few women underwent sterilization there between March and December 1981, they all were included in the study.

The final sample consisted of 817 women, or 60 percent of the potential respondents. Response rates did not differ substantially among sites (58 percent in the rural district vs. 61 percent in Colombo and the tea estates). The goal of obtaining at least 100 completed interviews among women at each site and during each payment period was achieved in only three of the final nine site/payment combinations. However, none of the women approached for interview refused to participate in the study. In all sites, about 25 percent of those originally selected for the study were not interviewed because they had moved to another part of Sri Lanka or to the Middle East. Almost nine percent of the women could not be reached at home after three attempts had been made to interview them, and six percent were not interviewed for "other" reasons. Information about the characteristics of women who were not successfully followed up is not available.

The researchers identified factors prior to the operation, as well as outcomes or events after the procedure, that might be associated with regret. Two of these factors are economic—the amount of payment acceptors received and the level of family income. If women who would not otherwise have been sterilized were induced to undergo the procedure because of the payment, one would expect the proportion of women who regret the operation to increase with the level of the payment. Also, one might expect women with lower family incomes, for whom the reimbursement accounted for a larger percentage of income, to be more likely than others to regret sterilization.

Data were collected on the demographic characteristics of the women at the time of sterilization, including their age, their

Table 2. Percentage distribution of respondents, by various characteristics at the time of interview, according to the site of the procedure

Characteristic	All (N=817)	Colombo (N=297)	Rural district (N=351)	Tea estates (N=169)
Education (yrs.)*				
0	14.1	9.1	9.1	33.1
1–5	25.0	29.3	30.8	53.8
6–9	35.0	43.1	40.7	8.9
≥10	15.9	18.5	19.4	4.1
Ethnicity*				
Sinhalese	74.2	86.2	90.0	20.1
Indian Tamil	18.8	0.3	8.0	74.0
Sri Lankan Tamil	4.5	10.8	0.6	1.8
Sri Lankan Moor/other	2.4	2.7	1.4	4.1
Religion*				
Buddhist	70.0	76.1	88.3	21.3
Hindu	20.1	7.7	6.8	69.2
Catholic	6.9	12.8	3.1	4.7
Muslim	2.1	1.7	1.4	4.1
Other	1.0	1.7	0.6	0.6
Employment status*				
Employed	34.4	18.2	22.5	87.6
Not employed	65.6	81.8	77.5	12.4
Current monthly income*				
Rs 300	16.8	18.5	22.3	1.8
Rs 301–700	46.3	38.4	52.0	47.9
Rs 701–1,000	23.3	21.9	14.4	44.4
>Rs 1,000	12.4	17.5	11.3	5.5
Unknown	1.3	3.4	0.0	0.5
Contraceptive use*,†				
Ever used	39.2	42.4	41.9	27.8
Never used	60.8	57.6	58.1	72.2
Current marital status				
Married	98.8	99.0	98.9	98.2
Not married	1.2	1.0	1.1	1.8
Age-group†				
<25	21.9	21.9	25.3	19.1
25–29	31.5	29.6	25.6	46.2
≥30	46.6	45.1	45.2	31.9
(Mean)	(29.2)	(28.8)	(30.2)	(28.0)
No. of living children†				
1	0.6	1.0	0.3	0.6
2	20.4	20.2	14.0	34.3
3	41.4	48.1	38.7	33.7
≥4	37.7	30.7	47.0	~~31.4~~
(Mean)	(3.5)	(3.4)	(3.8)	(3.1)
Timing of sterilization*				
At delivery	27.5	12.8	47.3	12.4
1 mo. post-delivery	14.2	18.2	10.0	15.9
2–11 mos.	25.6	28.3	14.8	43.2
12–23 mos.	11.4	13.1	10.3	10.7
≥24 mos.	14.7	23.2	13.4	2.4
Unknown	6.6	4.4	4.3	15.4
Total	100.0	100.0	100.0	100.0

*Differences are statistically significant at p<0.05.

†At the time of sterilization.

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*The tea estates are part of a highly structured employment system that depends heavily on manual labor provided by Indian families.

Table 3. Percentage of women who regretted their sterilization,* by site of the procedure, payment period and amount of payment

Site, payment period and amount of payment	%	N
Total	**14.3**	**817**
Colombo	**12.8**	**297**
(3) Rs 200	14.1	99
(4) Rs 300	10.2	98
(5) Rs 500	14.0	100
Tea estates†	**15.4**	**169**
(3) Rs 500	13.0	77
(4) Rs 500	17.4	92
Rural district	**15.1**	**351**
(1) Rs 100	13.0	46
(2) Rs 500	14.3	91
(3) Rs 200	20.6	97
(4) Rs 300	12.0	117

*In this and subsequent tables, women who wanted another child and women who wished they had been sterilized later or not at all.

†The sterilizations of women from the tea estates were subsidized by the estates at a level of Rs 500 from 1980 to 1983.

Note: None of the associations between regret and amount of payment reached statistical significance.

marital status and the number and sex of their children. A number of studies have shown these variables to be associated with sterilization regret.[5] Although it seems plausible that younger and low-parity women would be the most likely to feel regret, a review of the available research indicates no consistent association between age and regret.[6]

A wide range of other variables were examined, such as ethnicity, religion and residence. In addition, other factors were studied that measure the degree to which each woman freely made an informed choice to be sterilized—including an understanding of the irreversibility of the procedure, knowledge of reversible family planning methods and the influence of medical and family planning staff.

Because sterilization regret may be associated with events that occur after the procedure—such as poor physical or emotional adjustment to the operation, marital disruption or, perhaps most traumatic, the death of a child—respondents were also asked whether they had experienced any of these negative poststerilization events.

Characteristics of the Women

Table 2 (page 23) shows the characteristics of the women at each site at the time of interview. The profiles of the urban and the rural women were quite similar, but, not surprisingly, these women were more likely than than those from the tea estates to have had six or more years of education, to be Sinhalese rather than Indian Tamil, to be Buddhist rather than Hindu, to be unemployed and to have low family incomes.

Overall, only 39 percent of respondents had ever used a contraceptive method before undergoing sterilization. However, women from Colombo and the rural district were more likely than those from the tea estates to have done so (42 percent vs. 28 percent). Among women who had practiced contraception, the last method used varied among the sites: Women from Colombo had most commonly used oral contraceptives; those from the tea estates were most likely to have practiced periodic abstinence; and those from the rural district had most commonly used the IUD (not shown).

At the time of sterilization, the mean age among all women was 29, and their mean number of living children was 3.5. In all three sites, almost every woman was currently married. However, the women's age and family size and their age at and the timing of sterilization varied significantly among sites: At sterilization, women from the tea estates were younger and had fewer living children than women from the other two sites. Almost half (47 percent) of the sterilizations among women in the rural district occurred within one month after delivery, compared with 13 percent among women in Colombo and 12 percent among women on the tea estates.

Sterilization Regret

To get a general picture of the extent of sterilization regret and the reasons for acceptors' dissatisfaction or satisfaction with the procedure, interviewers asked respondents the following questions: "(1) If you had to make the decision over again, would you still get sterilized? Why or why not? (2) Since you were sterilized, have you changed your mind and regretted having the sterilization because you wanted to have another child? (3) Do you wish you had been sterilized sooner than you were or later, or do you regret being sterilized? Why or why not? (4) Are you satisfied with your sterilization? Why or why not? (5) Do you feel that sterilization has improved your life, has had no effect, or has made it worse?"

Overall, 15 percent of respondents indicated by their answer to at least one of the questions that they had experienced some regret about or dissatisfaction with sterilization; the proportion ranged from 14 percent of the women in Colombo to 17 percent of those on the tea estates (not shown). Of those who felt some regret, 92 percent said that they wanted more children or they wished they had been sterilized later or not at all. Five percent reported that sterilization had made their life worse or caused them dissatisfaction, but they did not regret the timing of the procedure or want to have additional children; consequently, these women were not considered to have experienced regret. Most of

Table 4. Percentage of women who regretted their sterilization, by various characteristics at the time of sterilization

Characteristic	%	N
Age-group*		
<25	28.5	179
25–29	11.3	256
30–34	10.7	243
≥35	7.9	139
No. of living children*		
0–1	†	5
2	29.3	167
3	13.4	336
4	7.0	157
≥5	5.9	152
Sex of children*		
Male and female	9.8	643
Females only	29.7	74
Males only	32.0	100
Duration of marriage (yrs.)*		
<5	33.3	123
5–9	14.5	344
≥10	6.0	298
Unknown	15.4	52
Timing of sterilization		
At delivery	11.6	225
Postdelivery		
1–3 months	6.6	199
4–11 months	15.9	126s
≥1 year	16.0	213
Unknown	13.0	54
Monthly income‡		
<Rs 300	11.9	134
Rs 301–500	12.7	244
Rs 501–700	17.2	134
Rs 701–1,000	18.3	191
>Rs 1,000	11.9	101
Education (yrs.)		
0	12.2	115
1–5	14.3	286
6–9	14.3	286
≥10	15.6	128
Ethnicity		
Sinhalese	14.5	606
Sri Lankan Tamil	5.4	37
Indian Tamil	16.9	154
Religion		
Buddhist	14.9	572
Hindu	15.9	164
Catholic	5.4	56
Other	12.0	25

*Differences are statistically significant at $p<0.05$.

†Cell size insufficient.

‡Determined at time of interview.

the participants who said they would not get sterilized if they had to make the decision again said they were too old or no longer sexually active, indicating that they had misunderstood the question.

When the category of those who regret sterilization was limited to women who responded positively to questions 2 and 3—that is, women who said they wanted to have another child (12 percent) and those who said they wished they had been sterilized later (six percent) or not at all (five percent)—14 percent of respondents fell into this category. (This is the definition of regret that will be used throughout the remainder of the article.) The desire for more children was highly correlated with regret: Of the 45 women who said they wished they had been sterilized later, 80 percent wanted more children; of the 37 who wished they had never been sterilized, 81 percent wanted more children.

The researchers performed a series of analyses to determine the extent to which economic, demographic and decision-making factors at the time of sterilization, and events that occurred later, were associated with regret.

- *Economic factors.* Table 3 shows the proportion of women who regretted their sterilization according to the site of the procedure, the payment period and the amount of payment. The results of a chi-square test indicate no statistically significant association between regret and payment amount at any site ($p = 0.66$). These results are corroborated by responses to other questions that sought to determine whether financial reasons motivated women to undergo sterilization. For example, respondents were asked whether the payment was important in their decision to be sterilized. Only 12 women said that it was an important factor.

- *Demographic and social factors.* The data from the three sites were pooled to determine whether any demographic factors present at the time of sterilization were associated with regret. Table 4 shows that younger women were significantly more likely than older women to regret having been sterilized. In fact, women under 25 at sterilization were almost four times as likely as women 35 and over to experience regret (29 percent vs. eight percent). Regret was likewise significantly associated with the number of children a woman had: Thirty percent of the women with two children regretted the sterilization, compared with only six percent of those with five or more. Women were also significantly more likely to regret having been sterilized if they did not have a child of each sex. The sex of the "missing" child, however, was not a factor in regret. Of the women who lacked a son, 30 percent regretted their decision; of those who lacked a daughter, 32 percent did. Women whose children were all of one sex were twice as likely to regret their sterilization as women with the same number of children but at least one of each sex (not shown).

Given that younger women have been married a shorter time and have fewer children than older women, it is not surprising that women married fewer than five years were more likely to report regret than those married 5–9 years and those married 10 or more years (33 percent vs. 15 percent and six percent, respectively).

Other researchers have considered the length of time that elapses between the birth of the last child and the sterilization procedure to be a possible factor in regret,[7] hypothesizing that women who undergo sterilization at the time of delivery may be more likely than those who have the operation later to regret their decision. The latter group may be physically and psychologically better prepared, less likely to undergo the procedure for economic reasons and more confident that their youngest child will survive its first year. However, among the Sri Lankan women in this study (when women who underwent sterilization within a month of delivery are assumed to have had the procedure at delivery), the timing of the sterilization appears to have had no impact on regret.

The table also shows no association between regret and respondents' family income, education, ethnicity or religion. Although Sri Lankan Tamils are less likely than Sinhalese or Indian Tamils to experience regret, the difference is not statistically significant ($p = 0.20$). Nor is there a statistically significant religious differential in levels of regret.

- *Decision-making factors.* To determine whether a woman was more likely to feel regret if someone else had made the sterilization decision for her, respondents were asked whom they considered the most influential person in their decision, and whether they felt others had tried to pressure them to undergo sterilization. As Table 5 shows, 90 percent of the women reported that they themselves had been the most influential person in their decision; the vast majority of these women did not feel that others had tried to pressure them. Eleven percent of the women said that others had been the most influential in their decision; nevertheless, these respondents were likely to report that they had not been pressured by those other people. Of the women who reported that others had had the most influence on their decision and that others had pressured them to undergo sterilization, more than half (58 percent) regretted their sterilization.

Table 5. Percentage distribution of respondents, and percentage who regretted their sterilization, by whether the woman herself or other individuals had had the most influence on the sterilization decision

Decisive influence	% of total	% who regret
Self	**89.5**	**13.1**
Pressured by others	3.3	7.4
Not pressured by others	86.2	13.5
Others	**10.5**	**24.4**
Pressured by others	2.3	57.9
Not pressured by others	8.2	14.9
Total	**100.0**	**14.3**

Women were also asked about the degree of influence that doctors, nurses, family planning workers, friends and husbands had had in the decision-making process. A doctor's advice was quite important to 42 percent of the women (see Table 6), almost twice the proportion who reported that a family planning worker's advice was important (24 percent). Even when respondents said that medical staff had had great influence on their decision, this influence was not associated with regret. Among those who reported that advice from a doctor had been important, 11 percent regretted having been sterilized; among women who had considered advice from a family planning worker important, 12 percent regretted their decision.

Women who reported that friends had strongly influenced their decision were

Table 6. Percentage of respondents who reported that another person had a great influence on their decision, and percentage of those who regretted their sterilization*

Influential in decision	% of total	% who regret
Doctor	41.6	11.2
Nurse	52.1	8.9
Family planning worker	24.4	12.1
Sterilized friend	43.6	15.2
Unsterilized friend	16.3	16.5
Husband	65.9	11.3

*Respondent could select more than one person.

Table 7. Percentage of respondents who regretted their sterilization, by number of living children at the time of sterilization and by whether any children died after the procedure

No. of children and child deaths	%	N
Any number		
Child died	48.5	33
No death	12.9	784
One		
Child died	0.0	0
No death	60.0	5
Two		
Child died	81.8	11
No death	22.3	156
Three or more		
Child died	31.8	22
No death	9.3	623

more likely to experience regret than were those who claimed that nurses, doctors or family planning workers had greatly influenced them. Perhaps friends gave these women inaccurate information or did not describe the procedure correctly.

The role of the husband in the sterilization decision and his support of or opposition to the operation are important in understanding regret. Women who said their husband had greatly influenced the decision were less likely than other women to regret sterilization. In contrast, women who had not discussed the operation with their husband and women who had discussed it but did not have their husband's support were twice as likely to regret sterilization as those whose husbands knew and approved of the decision—22 percent and 23 percent vs. 12 percent, respectively (not shown).

Table 8. Percentage of women with health, marital and emotional problems that they attributed to sterilization, percentage who regretted their sterilization because of a specific problem and percentage with no such problem who regretted their sterilization

Type of problem	% with problem	% with problem who regret	% without problem who regret
Any	**97.2**	**14.7**	**na**
Health	**96.5**	**14.4**	**10.7**
Required treatment	37.0	16.6	13.0
Did not require treatment	27.4	15.2	14.0
Menstrual cycle more bothersome	27.9	16.2	13.6
General worsening of health	45.8	18.4	10.8
Emotional or marital	**33.2**	**36.2**	**3.6**
Husband wants more children	14.9	62.3	5.9
Marital harmony disrupted	2.7	31.8	13.9
Loss of feeling feminine	5.8	12.8	14.4
Worsening of sexual relations	6.6	24.1	13.6
Other emotional problems	7.7	20.6	13.8

Note: na = not applicable.

- *Poststerilization events.* Table 7 shows the proportion of women who regretted their decision, by the number of living children they had at the time of sterilization and whether they lost a child after undergoing the procedure. Almost half of all the women who lost a child regretted having been sterilized. Among women with two children at sterilization, 82 percent of those who subsequently lost a child regretted their decision, and among those with three children or more, 32 percent did.

Events less traumatic than the death of a child that occur after sterilization also can contribute to dissatisfaction with the procedure. Table 8 shows the proportion of women who reported a health or emotional problem that they believed was caused by the sterilization, and the proportion of those with problems who regretted the sterilization.

Almost all of the women (97 percent) attributed at least one health or emotional problem to the sterilization. Nearly 90 percent of the women reported that they were unable to work at home immediately after the surgery, probably as a consequence of physical problems arising from the surgery (not shown). The amount of time women had been unable to work at home ranged from one day to six months; however, fewer than half of the women said it had been more than a week. Respondents who said they had been unable to work at home were more likely than those who had continued working to regret the sterilization (16 percent vs. three percent). The most common physical problems reported were backaches and abdominal pain. Of those who reported physical problems, half had received treatment as outpatients. Only four percent had been treated in a hospital, one indication that the physical problems were usually not severe. One-fourth reported that their menstrual cycle became more bothersome following the sterilization (see Table 8). Almost half reported a general worsening of health since the operation; these women were more likely to regret the sterilization than those who did not report a general worsening of health (18 percent vs. 11 percent).

One-third of the participants reported having an emotional or marital problem that they attributed to the sterilization. The complaint cited most often, by 15 percent of the women, was that their husband wanted more children; 62 percent of these women regretted the sterilization. With the exception of women who said they felt less feminine after the procedure, those who reported any emotional or marital problem were much more likely than those without such a problem to regret having been sterilized (36 percent vs. four percent).

Determinants of Regret

Table 9 shows the results of a logistic regression analysis estimating the odds that a person with a particular risk factor would regret having been sterilized after the effects of the other factors are controlled for. For example, women who did not have at least one son and one daughter were three times more likely to regret their sterilization than were women who had at least one child of each sex. Besides the seven variables shown, the site of the procedure and the amount of payment were also controlled for, even though there was no prior indication that these factors were associated with regret.

As the table shows, the most important determinants of sterilization regret among women in the sample were not having a child of each sex at the time of the operation, having a child die subsequent to the procedure, being married fewer than five years, having two children or fewer, having a husband who opposes sterilization or with whom it was not discussed and not having been in control of the sterilization decision. Because women under 25 are more likely than women 25 or older to have been married fewer than five years and to have fewer than three children, it is not surprising that young age was not significantly associated with regret once duration of marriage and number of children were controlled for.

Program staff most likely would benefit from being able to easily identify risk factors for regret, in order to target for additional education or counseling prior to sterilization the women with greatest potential for regretting sterilization. Therefore, the variable concerning the death of a child subsequent to the operation was removed from the regression model, since such information cannot be known at the time of sterilization. When the child mortality variable was dropped from the model, the only significant change in the odds ratios was that being under 25 became significant.

Table 10 shows the predicted probabilities of regret that have been calculated from the regression equation for the various combinations of risk factors. Of the 342 women who had none of the six risk factors, the probability of regret was four percent; among those with one risk factor, the probability of regret varied from eight to 13 percent, while among those with two risk factors, it ranged from 16 to 24 percent. The probability of regret was correspondingly higher among those with three or four risk factors.

Nevertheless, predictions of risk should not be based solely on the number of risk factors a woman has, but on the particular combination of factors. For example, the likelihood of regret is highest among women who lacked a child of each sex. All women with this risk factor may need additional counseling.

Discussion

It is difficult to quantify sterilization regret because regret can be defined in a number of ways. For example, in this study, if regret had been defined very broadly as any emotional problem attributed to the operation, one-third of the women would have been identified as regretting sterilization. On the other hand, if the definition of regret had encompassed only those women who said that they wished they had never been sterilized, fewer than five percent would have been classified as regretting sterilzation.

The phrasing of questions concerning satisfaction and regret and the interpretation of responses can be especially difficult. Many women misunderstood the question, "If you had to make the decision over again, would you still get sterilized?"—one of the "simplest"—as evidenced by their replies that they were now too old to be sterilized. Such women do not appear to regret the operation. Other participants gave contradictory responses to questions; for example, some who said they regretted having been sterilized because they wanted to have another child also said they did not regret the timing of their sterilization. For these women and others, it is difficult to distinguish regret about sterilization from regret about growing older.

Table 9. Odds of regretting sterilization, for women with selected risk factors

Risk factor	Odds ratio	95 percent confidence interval
Lacked child of each sex	3.3	2.0–5.3
Death of a child since sterilization	6.7	2.9–15.6
Married <5 years	2.2	1.2–4.0
Lacked control over sterilization decision*	11.0	3.7–32.6
<3 children	2.3	1.3–3.9
Lacked spousal support†	2.2	1.3–3.5
Age <25	1.6	0.9–2.8

*Includes women who said that someone besides themselves was most influential in making the sterilization decision and that the other person had persuaded them to undergo sterilization.

†Includes women who did not discuss their sterilization plans with their husbands and some who did discuss their plans but whose husbands disapproved.

Notes: Sterilization site, amount of payment and other factors were controlled for. A stepwise logistic regression model was used. Variables other than those shown above did not enter the regression because they made little additional contribution to explanation of the variance.

In this study, the factors that were found to be associated with regret were not having a child of each sex, being married fewer than five years, having fewer than three children, being under 25 years of age, having a husband who did not support the sterilization decision and believing that others made the decision. One of the most important findings is the strong association between regret and not having a child of each sex; less surprising is the association between regret and number of living children. Over 85 percent of the women who said they regretted sterilization reported they did so because they wanted to have more children. Similarly, other investigators have found that sterilization regret in developing countries is likely to be associated with a desire for more children, whereas regret in developed countries is more likely to be associated with remarriage and the desire to have children with the new husband.[8]

Perhaps the most important finding from this study for those involved with the sterilization program in Sri Lanka is that regret is not associated with the amount of the payment a woman receives for undergoing the procedure, although the payment may affect the timing of the operation. Women who had received higher payments were no more likely than those who had received lower amounts to regret having been sterilized. This finding should reassure policy-makers who have come under criticism for the possible coercive effects of the payment. The most likely explanation for the dramatic increases in voluntary sterilizations in the early 1980s in Sri Lanka is that pent-up demand for sterilization was being met by successful government and nongovernmental programs to improve access to contraceptive services.

How could Community Development Services reduce the level of regret among women obtaining sterilizations in their facilities? Counseling and education efforts targeted at those most likely to experience regret are the most cost-effective means of reducing regret. Except for four percent with "unexplained" regret, all of the women who regretted their decision to be sterilized had had at least one of the other six risk factors for regret at the time of the operation.

Table 10. Predicted probability* that women will regret their sterilization, by risk factors

Risk factor	Probability	N
None	**0.04**	**342**
One		
Age <25	0.08	36
Lacked child of each sex	0.13	51
<3 children	0.09	32
Married <5 years	0.10	15
Lacked spousal support	0.10	105
Two		
Age <25, married <5 years	0.16	21
Lacked spousal support, lacked child of each sex	0.24	13
Age <25, lacked spousal support	0.16	13
<3 children, lacked child of each sex	0.24	28
Age <25, <3 children	0.16	15
Three		
Age <25, <3 children and married <5 years	0.28	17
Age <25, <3 children and lacked child of each sex	0.36	15
Four		
Age <25, <3 children, married <5 years and lacked child of each sex	0.54	17

*Probabilities are not presented for combinations in which N totaled less than 10.

Counseling programs should offer information on reversible contraceptive methods, including instructions on their use, their cost and the likelihood of adverse side effects. In addition, a counselor should inform each woman of the irreversibility of the procedure, impress upon her the advantages of discussing the operation with her spouse and assess her attitude toward sterilization, her ability to accept loss and her relationship with her husband.

Finally, it should be noted that this study not only identified women who regretted not having waited to be sterilized, but also identified those who would have preferred to undergo sterilization earlier. Fifteen percent of the participants reported that they wished they had been sterilized earlier. This finding indicates the existence of an unmet demand for sterilization in Sri Lanka, and should encourage program planners to increase the availability of sterilization services.

References

1. J. A. Ross and S. Isaacs, "Costs, Payments and Incentives in Family Planning Programs: A Review of Developing Countries," *Studies in Family Planning*, **19**:5, 1988.

2. Department of Census and Statistics, Ministry of Plan Implementation, and Westinghouse Health Systems, *Sri Lanka Contraceptive Prevalence Survey Report*, Colombo, 1982.

3. Family Health Bureau, *Annual Report on Family Planning Acceptors—Sri Lanka 1982*, Colombo, 1982.

4. Population Division, Ministry of Plan Implementation, *Voluntary Sterilization Programme in Sri Lanka*, Colombo, 1985.

5. S. G. Philliber and W. W. Philliber, "Social and Psychological Perspectives on Voluntary Sterilization: A Review," *Studies in Family Planning*, **16**:1, 1985.

6. Ibid.

7. A. Aribarg and S. Aribarg, "Emotional Reaction to Interval and Postpartum Sterilization," *International Journal of Obstetrics and Gynaecology*, **16**:40, 1978; and ——, "Emotional Reaction to Female Sterilization: A Prospective Study," *Journal of the Medical Association of Thailand*, **65**:167, 1982.

8. P. Piotrow, "Reversing Female Sterilization," *Population Reports*, Series C, No. 8, Sept. 1980.

Resumen

Un estudio de 817 sri-lankesas que se habían hecho esterilizar entre 1980 y 1983 revela que el 14 por ciento lamentaba mas tarde haberlo hecho, es decir que afirmaba desear otro hijo, o hubiera preferido esterilizarse más adelante o directamente no haberlo hecho. Los principales determinantes del arrepentimiento eran no tener un hijo de cada sexo al momento de la operación, llevar casada menos de cinco años, ser menor de 25 años, tener dos hijos o menos, no haber podido decidir libremente, que el marido se opusiera a la esterilización, o que hubiese muerto un hijo después del procedimiento.

Résumé

Une étude de 817 ceylanaises ayant été stérilisées entre 1980 et 1983 indique que 14 pour cent regrettent l'opération—c'est à dire qu'elles auraient aimé soit avoir un autre enfant, soit avoir été stérilisées ultérieurement ou pas du tout. Les principaux facteurs déterminant ce regret étaient de ne pas avoir eu un enfant de chaque sexe au moment de l'opération, d'avoir un enfant qui meurt après l'opération, d'être mariée depuis moins de cinq ans, d'avoir moins de 25 ans, d'avoir deux enfants ou moins, de ne pas avoir pu prendre la décision elle-même, et d'avoir un mari qui s'oppose à la stérilisation.

Women's Education and Fertility

(Continued from page 14)

"Measuring Family Planning Program Effort in LDCs: 1972 and 1982," in N. Birdsall, ed., *The Effects of Family Planning Programs on Fertility in the Developing World*, World Bank, Washington, D.C., 1985.

9. UN, 1987, op. cit. (see reference 2); and World Health Organization, "The Prevalence and Duration of Breastfeeding: A Critical Review of Available Information," *World Health Statistics Quarterly*, **35**:92, 1982.

10. S. Millman, "Trends in Breastfeeding in a Dozen Developing Countries," *International Family Planning Perspectives*, **12**:91, 1986.

11. Costa Rica Demographic Association, *The Costa Rica Fertility and Health Survey, 1986*, Centers for Disease Control (CDC), Atlanta, 1987; R. S. Monteith et al., "Contraceptive Use and Fertility in Guatemala," *Studies in Family Planning*, **16**:279, 1985; Panama Ministry of Health, *Maternal-Child Health/Family Planning Survey, Panama 1984: Final English Language Report* CDC, Atlanta, 1986; and Centro Paraguayo de Estudios de Población and CDC, Family *Planning Survey, Paraguay 1987: Final English Language Report*, Atlanta, 1988.

12. J. Bongaarts and R. G. Potter, 1983, op. cit. (see reference 7), pp. 25, 86–87.

13. C. F. Westoff, N. Goldman and L. Moreno, "Peru Experimental Survey Results, Advance Report," Office of Population Research, Princeton University, Princeton, N.J., 1988.

14. J. Cleland and S. Rutstein, "Contraception and Birthspacing," *International Family Planning Perspectives*, **12**:83, 1987.

15. UN, 1987, op. cit. (see reference 2).

16. Centro de Estudios de Población y Paternidad Responsable, Instituto Nacional de Investigaciones Nutricionales y Médico Sociales and Institute for Resource Development/Westinghouse (IRD), *Encuesta Demográfica y de Salud Familiar, 1987*, Quito, Ecuador, 1988, Table 5.13; Consejo Nacional de Población y Familia and IRD, *República Dominicana Encuesta Demográfica y de Salud, DHS-1986*, Santo Domingo, Dominican Republic, 1987, Table 7.9; Corporación Centro Regional de Población, Ministerio de Salud de Colombia and IRD, *Tercera Encuesta Nacional de Prevalencia del Uso de Anticonceptivos y Primera de Demografía y Salud, 1986*, Bogotá, Colombia, 1988, Table 5.9; and Instituto Nacional de Estadística, Consejo Nacional de Población and IRD, *Encuesta Demográfica y de Salud Familiar (ENDES 1986): Resultados Preliminares*, Lima, Peru, 1987, Table 6.9.

17. R.E. Lightbourne, "Individual Preferences and Fertility Behaviour," in J. Cleland and J. Hobcraft, eds., *Reproductive Change in Developing Countries: Insights from the World Fertility Survey*, Oxford University Press, London, 1985, pp. 165–198.

Resumen

Según las de encuestas recientes, la fecundidad en cuatro países de Latinoamérica ha disminuido rápidamente. Además, en tres de los cuatro países (Colombia, Ecuador y República dominicana) la diferencia de fecundidad entre mujeres instruídas y las carentes de escolaridad—la que fue muy grande durante los años 70—también ha empezado a reducirse. Sin embargo, las diferencias de fecundidad según escolaridad quedan substantivas, sobretodo en Perú, donde éstas persisten mientras la fecundidad general ha bajado.

En estos cuatro países, las mujeres de edad fecunda han completado de seis a siete años de escolaridad, aunque la proporción de mujeres sin escolaridad o con solamente 1–3 años oscila del 23 al 31 por ciento. Por lo general, esas mujeres se casan más tarde, tienen más probabilidades de usar algún método anticonceptivo moderno y desean familias más pequeñas que las mujeres sin educación..

En los cuatro países, el nivel educacional de las mujeres aumenta con suficiente rapidez para provocar una disminución de la fecundidad, simplemente por aumentarse el porcentaje de aquellas con mayor instrucción. De por sí, las mejoras educacionales explicarían entre el 40 y el 67 por ciento de la disminución de la fecundidad producida en los cuatro (suponiendo que no haya habido modificaciones de la conducta reproductiva dentro de los grupos educacionales). Al mismo tiempo, la reducción de la fecundidad dentro de grupos educacionales ha sido grande y en tres de los cuatro países, ha contribuido a más de la mitad de la disminución observada de la fecundidad. Además, el uso de anticonceptivos a aumentado significativamente dentro de todos los grupos, mientras que el tamaño de familia ideal parece haber disminuido. Al mismo tiempo, se demuestra dentro de cada grupo una tendencia dentro de los grupos hacía el matrimonio más precoz y más universal—un resultado inesperado.

Résumé

Il y a eu une décroissance rapide de la fécondité dans quatre pays d'Amérique latine, d'après de nouvelles données. En plus, dans trois des quatre pays (Colombie Equateur et la République dominicaine), l'écart entre la fécondité des femmes instruites et celle des femmes non instruites, qui a été très large pendant les années 70, a commencé à se rétrécir. Néanmoins, les différentielles de scolarisation restent significatives, surtout au Pérou où cette différentielle persiste tandis que le fécondité globale a diminué.

Dans ces quatre pays, les femmes en âge de procréer comptent en moyenne entre six et sept ans de scolarisation bien que la proportion sans éducation formelle ou peu instruite (1–3 ans) s'échelonne entre 23 et 31 pour cent. En général, ces femmes-là se marient plus tard et sont plus suceptibles d'utiliser une méthode contraceptive moderne ainsi que de désirer une famille moins nombreuse que les femmes sans éducation.

Dans les quatre pays, simplement du fait d'une augmentation de la proportion de femmes plus instruites, le niveau de scolarité atteint par les femmes adultes accuse une croissance suffisamment rapide pour infléchir le taux de fécondité.. Cette amélioration à elle seule expliquerait entre 40 et 67 pour cent de la baisse de fécondité dans les quatre pays (en assumant qu'il ne s'est pas produit de changement de comportement procréateur à l'interieur de chaque groupe de scolarité). En même temps, les déclins de fécondité à l'intérieur de chaque catégorie scolaire ont été grands, et dans trois pays, ils ont contribué à la réduction observée de la fécondité. En plus, la pratique de la contraception a augmenté à l'intérieur de chaque catégorie scolaire, tandis que le nombre idéal de la famille semble avoir baissé. En même temps, on note—résultat inattendu—une tendance vers le mariage plus tôt et universel dans chaque groupe de scolarité.

Use of Periodic Abstinence and Knowledge Of the Fertile Period in 12 Developing Countries

> **"The proportions of women in a union who currently practice periodic abstinence are quite modest, ranging from one percent in Liberia, Thailand and the Dominican Republic to 15 percent in Sri Lanka and 18 percent in Peru."**

By Amy R. Sheon and Cynthia Stanton

Summary

Data from the Demographic and Health Surveys carried out in 12 African, Asian and Latin American countries show that in 10 of the countries, fewer than 22 percent of women have ever practiced periodic abstinence and fewer than seven percent currently practice that method. In Sri Lanka and Peru, however, 40 percent of women have used periodic abstinence, and 15 percent and 18 percent, respectively, are currently using the method. The vast majority of women who practice periodic abstinence use the calendar, or rhythm, technique to determine their fertile period; one-fourth to more than one-half of current users in seven countries report using an additional method (usually the condom or withdrawal) during the same month. The problem that women who have heard of periodic abstinence most often associate with that method is its ineffectiveness, and the most common reason users give for discontinuation is method failure.

In every country, women who have ever practiced periodic abstinence are more likely than others to know when their fertile period is, but even among ever-users, knowledge is far from universal: Morocco, Sri Lanka, Colombia, the Dominican Republic, Ecuador, and Peru are the only countries where at least half of all women who are ever-users of periodic abstinence are able to correctly identify the fertile period.

Introduction

Periodic abstinence from sexual intercourse has been one of a number of traditional practices observed in many cultures. Because the suggested times to abstain from intercourse vary among countries and may or may not be based on a woman's fertile period, the practice has had varying levels of impact on fertility.

Until recently, most programs that taught and promoted periodic abstinence were affiliated with the Catholic Church. However, in recent years, other organizations have become increasingly involved in teaching the method. Several scientifically based techniques of determining the fertile period are now promoted for use by couples who for religious, health or other reasons do not wish to use mechanical, hormonal or surgical means of contraception. These techniques, which are collectively referred to as "natural family planning" methods, include the basal body temperature method, the cervical mucus (or Billings) method and the sympto-thermal method. The basal body temperature method requires women to chart their temperature at rest every day. Because body temperature rises slightly after ovulation, this method can indicate when ovulation has occurred. The cervical mucus method relies on changes in the volume and consistency of cervical mucus to signal the fertile period. The sympto-thermal method uses a combination of cervical mucus and basal body temperature to predict and detect ovulation.

Although the successful practice of any of the natural family planning methods requires that couples abstain from sex for long periods—in some cases as many as one-half of the days in a woman's menstrual cycle—advocates say that the methods promote husband-wife communication and shared responsibility.[1]

During the first half of this decade, the United States, which is the largest single donor of funding for international population programs, steadily increased its funding of programs that teach natural family planning methods from $800,000 in 1981 to $7,800,000 in 1985.[2] Given the current interest shown by U.S. policymakers and private organizations in the promotion of natural family planning methods among people in Third World countries, this article examines knowledge and use of periodic abstinence among women of reproductive age in 12 developing countries. The data used in the study are from countries that have recently completed a Demographic and Health Survey (DHS), in which a nationally representative sample of women aged 15–49 were interviewed.

The data were collected between 1986 and 1988 in Burundi, Liberia, Ghana, Morocco, Sri Lanka, Thailand, Brazil, Colombia, the Dominican Republic, Peru, Ecuador and Trinidad and Tobago.

Two standard questionnaires were used in DHS countries.[3] The Model A Questionnaire collected data on knowledge, attitudes, ever-use and current use of contraception; it also included questions to obtain a complete contraceptive history. This questionnaire was used in countries with high levels of contraceptive prevalence, primarily those of Latin America and Asia. The Model B Questionnaire collected the same information as the Model A questionnaire, but did not include questions on contraceptive history. This questionnaire was used in countries with low levels of contraceptive prevalence, primarily those of Africa. Because of the differences in the questionnaires, some of the topics covered in this article are not applicable to every country.

Use of Periodic Abstinence

Both questionnaires asked respondents to name all the methods of contraception known to them. Interviewers then probed to determine if the respondents had heard

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Table 1. Percentage of women aged 15–49 and currently in a union who know of, have ever used or currently use periodic abstinence or modern contraceptive methods, 12 DHS countries, 1986–1988

Country	Knowledge		Ever-use		Current use*		N
	Periodic abstinence	Any modern†	Periodic abstinence	Any modern†	Periodic abstinence	Any modern†	
Africa							
Burundi	46.9	63.8	18.8	2.3	4.8	1.2	2,669
Ghana	41.0	76.5	19.7	22.5	6.2	5.1	3,156
Liberia	12.4	68.0	3.3	15.9	0.6	5.5	3,539
Morocco‡	51.7	97.5	9.2	53.9	2.3	28.9	5,447
Asia							
Sri Lanka‡	61.9	99.1	39.6	52.2	14.9	40.6	5,442
Thailand‡	28.6	99.5	5.7	82.4	0.9	63.6	6,236
Latin America & Caribbean							
Brazil§	78.1**	99.9	21.7**	82.0	4.3	56.7	3,471
Colombia	64.5	99.4	19.6	75.0	5.7	52.5	2,850
Dominican Republic	52.7	99.3	9.3	69.1	1.4	46.7	4,133
Ecuador	50.5	90.0	17.5	54.7	6.1	35.8	2,957
Peru	73.9	86.6	39.8	40.6	17.7	23.0	2,900
Trinidad & Tobago	47.9	98.9	11.5	79.2	2.6	44.4	2,617

*Includes only those women who reported periodic abstinence as the first method.

†Includes the pill, the IUD, injectables, vaginal methods, the condom, male and female sterilization and NORPLANT®.

‡Restricted to ever-married women. §Restricted to women aged 15–44.

**In Brazil, the calendar and Billings methods were treated as separate methods. In this and following tables knowledge and use data refer to either the calendar method or the Billings method (unless otherwise noted).

about specific methods that they had not mentioned spontaneously. For example, respondents who did not spontaneously name periodic abstinence were asked the following question: "Couples can avoid having sexual intercourse on certain days of the month when the woman is more likely to become pregnant. Have you ever heard of this method?" In each country, probes were translated into local languages and were modified to incorporate terminology familiar to respondents.

Table 1 displays prevalence of knowledge, ever-use and current use of periodic abstinence and modern contraceptive methods among women currently in a union* in the 12 countries. The knowledge columns include both spontaneous and probed responses. The data indicate that the proportion of women in union in each country who are familiar with periodic abstinence ranges widely, from 12 percent of those in Liberia to 78 percent of those in Brazil. Women who live in the Sub-Saharan African countries are least likely, and those who live in the Latin American nations are most likely, to have heard of periodic abstinence. Although knowledge of modern contraceptive methods follows the same regional patterns as does knowledge of periodic abstinence, modern methods are much more widely known. Almost all women in the Asian and Latin American countries and 64–77 percent of those in the Sub-Saharan African countries are familiar with modern methods.

As the table shows, up to 22 percent of women in a union in all of the countries studied except Peru and Sri Lanka have ever practiced periodic abstinence; in Peru and Sri Lanka, 40 percent of such women have tried this method. Further, the proportions of women in a union who currently practice periodic abstinence are quite modest, ranging from one percent in Liberia, Thailand and the Dominican Republic to 15 percent in Sri Lanka and 18 percent in Peru.

Table 2 shows that when women who have heard of periodic abstinence were asked what they consider to be the main problem with the method, between 30 and 71 percent said they know of no problems associated with it. The proportion of respondents in each country who named specific problems ranges from 22 to 56 percent, except in Sri Lanka, where only 12 percent of respondents named specific problems. By far, the problem that was most often mentioned in most countries is the method's ineffectiveness: One-third or more of the respondents in Morocco, Thailand, Brazil, Colombia and Peru gave this response, as did more than one-fifth of the women in the Dominican Republic, Ecuador and Trinidad and Tobago. In every country except Burundi, the second most often mentioned problem was the method's inconvenience, cited by 1–13 percent of respondents.

In all the countries except Trinidad and Tobago, a relatively high proportion (between 10 and 34 percent) of the women who reported familiarity with periodic abstinence said that they do not know what problems are associated with the method. A response of this nature suggests limited familiarity with the method. Another indication of limited knowledge is that in every country, women who said that they do not know what problems are associated with the method were much less likely to have spontaneously mentioned periodic abstinence than to have recognized the method when asked about it (not shown).

Because natural family planning encompasses different ways of determining the days on which to abstain from sexual intercourse to avoid pregnancy, women who have ever practiced periodic abstinence were asked: "The last time you used periodic abstinence, how did you determine on which days you had to abstain?" The data (not shown) reveal that calendar rhythm is by far the leading method used: Between 85 and 99 percent of women in all the countries have relied on this technique to determine their fertile period. Use of the basal body temperature method is higher in Liberia (where eight percent of ever-users used this method the last time) than in any of the other countries (where fewer than three percent of ever-users did). Use of the cervical mucus method is highest in the Dominican Republic and Burundi, where five percent and four percent of ever-users, respectively, have relied on it. In all the other countries, only three percent or fewer of ever-users have practiced the cervical mucus method. Among respondents who did not cite calendar rhythm as the last method used, "other method" was generally named more often than the temperature or mucus techniques, suggesting that such women use folkloric methods to determine the fertile period.

Table 3 presents the levels of ever-use of periodic abstinence among women ever in a union, according to level of education attained. (The proportions of ever-users in each education category in every country were standardized on the age distribution of the Sri Lanka sample to eliminate the effect of differential age distributions within education categories and across countries.) As the table shows, in every country, ever-use of periodic abstinence rises dramatically with education, paralleling the relationship commonly seen between education and use of all contraceptive methods. In all the countries, fewer than 16 percent of women with no education have ever practiced periodic abstinence, but the method has been tried by 31–64 percent of women who have attained more than a secondary education.

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*"Women currently in a union" includes both married women and women living with partners in a consensual union.

Because periodic abstinence is the only family planning method acceptable to the Catholic Church, one might expect Catholics to be more likely than women of other religions to practice it.* In fact, the data indicate that Catholic women in Liberia and Trinidad and Tobago are more likely than women of other faiths to have tried the method (not shown). However, the evidence suggests that factors other than religion may also influence women to try periodic abstinence. For example, in Sri Lanka, where 39 percent of ever-married women have practiced periodic abstinence, women of other Christian faiths and Buddhists are as likely as Catholics to have used this method (36 percent and 42 percent vs. 40 percent). Further, in Sri Lanka, substantial proportions of Muslims and women of "other" religions have used periodic abstinence (27 percent and 23 percent, respectively), and in Thailand and Brazil, higher proportions of non-Catholics than Catholics have done so.

In countries with high contraceptive prevalence, respondents whose last discontinued method was periodic abstinence were asked why they had stopped practicing it. The data (not shown) indicate that in seven out of the nine high-prevalence countries, the leading reason for discontinuation is method failure, cited by 30–56 percent of respondents in each country. The second most common reason given in many countries, and the leading reason for discontinuation in Thailand, is the desire to become pregnant. Other reasons for discontinuation include infrequent intercourse (cited by 10 percent of women in Peru, eight percent of those in Trinidad and Tobago and fewer than five percent of women in all other countries) and opposition by the partner (cited by 0–5 percent of women in all countries).

Knowledge of the Fertile Period

Successful use of periodic abstinence requires that women correctly identify the fertile period of the menstrual cycle. Therefore, it is important to assess levels of knowledge of the fertile period among ever-users of the method. It is also useful to compare that with knowledge of the fertile period among never-users of the method.

The DHS ascertained respondents' knowledge of the fertile period by their responses to the question: "When during her monthly cycle do you think a woman has the greatest chance of becoming pregnant?" Interviewers were trained to code responses using the following categories: "during her period," "just before her period," "just after her period," "during the middle of the cycle," "any time" and "don't know." If, in the interviewer's opinion, the woman gave the correct response, the interviewer recorded "middle of the cycle." Although it is not possible to determine whether a correct response means that the woman understands the ovulation cycle well enough to use periodic abstinence successfully, this measure can serve as a general indicator of respondents' knowledge of the fertile period. Given the overall minimal level of knowledge of the fertile period among respondents, collection of more detailed information on the subject would have been difficult.

As Table 4 (page 32) shows, the proportion of women ever in a union who correctly identified the fertile period ranges from six percent in Liberia to 44 percent in Sri Lanka, with the proportion generally

Table 2. Percentage distribution of women in a union who know of periodic abstinence, according to their perception of the main problem associated with use of the method, 10 DHS countries

Country	Main problem							N-
	None	Not effective	Partner disapproves	Inconvenient	Other	Don't know	Total	
Africa								
Burundi	46.9	11.1	10.5	0.2	1.8	29.6	100.0	1,498
Morocco	29.4	33.7	*	13.4	2.6	20.9	100.0	3.090
Asia								
Sri Lanka	66.3	7.1	0.6	3.9	0.8	21.3	100.0	3,558
Thailand	41.0	33.1	0.9	4.3	0.7	20.0	100.0	1,911
Latin America & Caribbean								
Brazil†	45.8	37.3	0.8	3.4	1.2	11.5	100.0	4,353
Colombia	34.2	42.9	1.5	8.6	2.8	10.0	100.0	3,261
Dominican Republic	34.8	21.1	1.3	6.2	3.0	33.6	100.0	3,796
Ecuador	42.4	26.3	0.9	2.7	4.6	23.1	100.0	2,.214
Peru	40.0	36.4	0.1	1.2	1.9	20.4	100.0	3,552
Trinidad & Tobago	71.4	26.5	0.0	1.2	0.4	0.5	100.0	1,760

*Not listed as a separate category in the questionnaire. †Among women who know calendar rhythm only.

Table 3. Percentage of women ever in a union who have ever practiced periodic abstinence, by education,* 11 DHS countries

Country	Total	Education				N
		None	Primary	Secondary	Higher	
Africa						
Burundi	17.8	15.5	28.3	41.4	†	2,924
Liberia	3.7	1.0	5.7	19.3	47.0	4,116
Morocco	9.2	5.2	19.9	38.3	58.2	5,982
Asia						
Sri Lanka	38.6	15.6	30.9	44.0	50.6	5,864
Thailand	5.7	2.6	3.3	19.7	30.8	6,775
Latin America & Caribbean						
Brazil	18.7	6.3	15.8	34.1	47.0	3,867
Colombia	19.3	8.1	14.9	29.9	37.1	3,336
Dominican Republic	9.1	1.6	4.4	18.7	35.5	5,250
Ecuador	17.0	3.2	11.2	27.1	40.8	3,251
Peru	39.0	15.9	34.3	50.9	64.3	3,238
Trinidad &Tobago	11.9	0.0	4.9	22.6	44.9	2,926

*Standardized on the age distribution of the Sri Lanka sample. †Fewer than 20 cases.

*The five DHS countries that ascertained respondents' religions were Liberia, Sri Lanka, Thailand, Brazil and Trinidad and Tobago.

Table 4. Percentage of women who correctly identify the fertile period, by marital status, ever-use and current use of periodic abstinence, 11 DHS countries

Country	Knowledge of the fertile period							
	Ever in a union	N	Never in a union	N	Ever-users	N	Current users*	N
Africa								
Burundi	21.4	2,924	7.8	1,046	35.3	544	40.5	158
Liberia	6.4	4,116	7.5	1,123	21.7	229	29.3	41
Morocco	17.3	5,982	na	na	50.3	521	55.7	131
Asia								
Sri Lanka	43.9	5,864	na	na	64.0	2,261	68.8	883
Thailand	12.8	6,775	na	na	39.0	380	37.9	69
Latin America & Caribbean								
Brazil	26.5	3,867	26.0	2,025	49.3	888	54.4	195
Colombia	31.4	3,337	32.6	1,994	59.3	676	60.7	187
Dominican Republic	19.7	5,250	19.4	2,395	50.7	471	49.2	61
Ecuador	24.0	3,251	22.6	1,462	50.0	554	50.5	192
Peru†	na	na	na	na	73.1	1,295	75.0	571
Trinidad & Tobago	18.5	2,926	15.7	880	47.2	335	55.7	97

*Includes women who use periodic abstinence as a second method, except in Liberia.

†Question only asked of those who know of periodic abstinence and have ever used any method.

Note: na = not applicable.

falling between 17 and 27 percent. Although women never in a union might be expected to be less likely than other women to know the fertile period, the data indicate that that is not uniformly true: In Liberia, Brazil, Colombia, the Dominican Republic and Ecuador, women never in a union are about as likely as those ever in a union to know when the fertile period occurs, possibly because the former have achieved higher levels of education than the latter. In general, however, knowledge of the fertile period is low in these countries.

In every country, women who have ever used periodic abstinence are much more likely than ever-married women overall to know their fertile period, but even among ever-users, knowledge is far from universal. For example, in Morocco, while only 50 percent of ever-users of periodic abstinence know when the fertile period is, even fewer (17 percent) ever-married women know. Overall, knowledge among women who have ever practiced periodic abstinence ranges from 22 percent in Liberia to 73 percent in Peru. Knowledge of the fertile period among current users is not much higher than it is among ever-users in any country.

Because ever-users of periodic abstinence have been shown to be better educated than other women, it is instructive to compare knowledge of the fertile period among periodic abstinence ever-users and never-users at every level of education. By doing so, one can determine if a woman's knowledge of the fertile period is simply a function of her education level, or if ever-users have received information on the subject that is not generally known among other women in the population. The data (not shown) indicate that not only does knowledge of the fertile period rise dramatically with education, but at every level of education, ever-users of periodic abstinence are much more likely than never-users to know when the fertile period occurs. In Morocco, for example, 11 percent of never-users who have had no education know when the fertile period is, compared with 29 percent of ever-users with no education. In contrast, 81 percent of never-users with more than a secondary education know their fertile period, compared with 93 percent of ever-users who have attained the same level of education. These findings suggest that women who have used periodic abstinence have received at least some information about the method.

However, the overall level of knowledge of the fertile period among ever-users and never-users is low. Morocco, Sri Lanka, Colombia, the Dominican Republic, Ecuador and Peru are the only countries studied where at least half of all the women who have ever used periodic abstinence are able to correctly identify the fertile period. In no country does the overall proportion of never-users who can correctly identify the fertile period exceed 31 percent. In fact, overall levels of knowledge of the fertile period are so low that one might wonder whether the respondents understood the question; however, it seems reasonable to assume that they did, because differences in levels of knowledge according to educational level are so consistently in line with expectations.

The DHS asked current users about the source of their current method. In some countries, current users of periodic abstinence were asked if they had visited a place in the last 12 months to obtain instructions for using the method; in a few countries, women were asked if they had ever received instructions. Because the question was either not asked or was restricted to the last 12 months in a majority of countries in the study, relevant data on the source of instruction for periodic abstinence are not available. Women who use natural family planning methods to identify their fertile days in order to avoid pregnancy may choose not to abstain from sex-

Table 5. Among women who practice periodic abstinence, percentage who used an additional method the month before the survey, and percentage distribution of such women according to the additional method used, 9 DHS countries

Country	% using additional method	Additional method used									N
		Pill	IUD	Injectables	Vaginal	Condom	Withdrawal	Other	None	Total	
Africa											
Morocco	21.4	1.5	0.0	0.0	0.8	5.3	11.5	2.3	78.6	100.0	131
Asia											
Sri Lanka	32.3	0.9	0.2	0.0	0.0	3.9	26.0	1.3	67.7	100.0	883
Thailand	52.4	5.3	0.0	0.0	0.0	24.9	18.1	4.1	47.6	100.0	69
Latin America & Caribbean											
Brazil	27.2	2.6	0.5	0.0	0.5	8.7	12.8	2.1	72.8	100.0	195
Colombia	25.7	0.0	1.8	0.0	5.7	2.7	14.7	0.8	74.3	100.0	187
Dominican Republic	25.5	0.9	0.0	0.0	2.3	8.7	10.2	3.4	74.5	100.0	61
Ecuador	15.1	1.0	1.0	0.5	2.6	5.2	4.7	0.0	84.9	100.0	192
Peru	24.3	1.2	0.0	0.4	2.1	3.1	14.4	3.1	75.7	100.0	571
Trinidad & Tobago	53.6	2.1	0.0	0.0	7.2	27.8	15.5	1.0	46.4	100.0	97

ual intercourse on fertile days; such women are said to be practicing fertility awareness rather than periodic abstinence. (However, in the DHS, women are not excluded as periodic abstinence users if they do not abstain on fertile days.)[4] To determine whether women who practice periodic abstinence use the method alone or in conjunction with other methods, the Model A Questionnaire asked current users of all methods: "At any time during the same month, do you regularly use any method other than (current method)?" Women who said they use periodic abstinence either as their first or additional method are classified according to the additional method currently used, as Table 5 shows.

The table reveals that the use of natural family planning techniques in combination with other methods is quite common in some countries. More than one-half of current users of periodic abstinence in Thailand and Trinidad and Tobago and at least one-fourth of current users in five other countries report using a combination of methods during the same month. In all countries except Colombia, condom and withdrawal are the two methods most frequently used in combination with periodic abstinence. In Colombia, withdrawal and vaginal methods are most frequently used. A small proportion of women in some countries claimed to be using the pill or the IUD in combination with periodic abstinence. Such seemingly improbable method combinations may have occurred because women were instructed to use a back-up method when starting a new method.

Discussion

Results from the DHS in the 12 countries studied show that overall, levels of knowledge of periodic abstinence are modest and levels of use are very limited. Fewer than seven percent of women in a union in all the countries but Sri Lanka and Peru currently practice periodic abstinence. Because the DHS data on use of the method are very similar to the results of World Fertility Surveys (WFS) and Contraceptive Prevalence Surveys (CPS) conducted in the study countries between 1977 and 1983,* there appears to have been no increase in the use of periodic abstinence in recent years. However, it is possible that recent efforts to promote natural family planning have attracted new users, but that this increase has been cancelled out by a concurrent decline in use in countries characterized by increasing education and urbanization—processes associated with the breakdown of traditional practices.

Interestingly, there appears to be no evident pattern in the relationship between use of periodic abstinence and use of modern methods. Two distinct phenomena may be taking place simultaneously: In countries where traditional practices remain common, women who use periodic abstinence to avoid pregnancy may switch to modern methods when they become available, and the use of periodic abstinence may decline as a result. On the other hand, in countries where modern methods are widely available and where periodic abstinence as a traditional practice is rare, women may adopt the method for religious reasons or to avoid the perceived health risks of other methods.

Calendar rhythm is the method of periodic abstinence last used by the vast majority of ever-users: Use of other types of periodic abstinence is minimal.

The fact that many women who practice periodic abstinence report using additional methods during the same month has implications for the evaluation of contraceptive failure rates. Failure rates for periodic abstinence and coitus-dependent methods that are calculated from survey data but are based on only one reported method may be understated or overstated because of the protection offered by a second method. For example, condom users who abstain from intercourse during the fertile period will experience a lower rate of failure than condom users who have intercourse throughout their cycles. On the other hand, periodic abstinence users who rely on condoms during the fertile period may experience a higher rate of failure than periodic abstinence users who abstain during the fertile period.

The problem most often associated with periodic abstinence among women who are familiar with the method is its ineffectiveness, and method failure is the most common reason given for discontinuation in many countries. Given the high proportion of users who could not identify the fertile part of the menstrual cycle, failure and fear of failure are not surprising.

The differences in levels of knowledge of the fertile period according to the woman's education are remarkably consistent across the countries included in this study. That between 58 and 93 percent of highly educated ever-married women who have ever used periodic abstinence correctly identified the fertile period is in sharp contrast to the minimal levels of knowledge recorded among less-educated women. This finding suggests that if the prevalence of periodic abstinence is to increase, particularly among less-educated women, the responsibility of educating women about the reproductive cycle and of convincing women of the effectiveness of periodic abstinence will fall on the programs promoting this method.

Since so much attention has been devoted to the promotion of periodic abstinence in recent years, there are a number of issues that need to be explored. For example, because of the wide variation in levels of knowledge of the fertile period, and because many women in traditional societies may have been taught to observe periodic abstinence as a traditional practice not directly related to the ovulation cycle, future surveys should include more detailed questions on where women get their information about periodic abstinence and on what specific instructions they are given for determining the fertile period. Other areas of research could include an assessment of the contraceptive failure rates among women who practice periodic abstinence, according to their level of education and according to their simultaneous use of other methods. In addition, researchers could assess levels of satisfaction with the method by comparing method continuation rates and reasons for method discontinuation among periodic abstinence users; the results of such analyses could help to guide program personnel in designing educational programs for the method.

References

1. Demographic Data for Development, *Periodic Abstinence in Developing Countries*, Institute for Resource Development/Westinghouse, Columbia, Md., 1986.

2. J. Spieler, "Contribution of Agencies to the Support of Natural Family Planning: United States Agency for International Development," paper presented at the meeting of the International Federation for Family Life Promotion, Ottawa, Canada, June 30, 1986.

3. Demographic and Health Surveys Program, "Model 'A' Questionnaire for High Contraceptive Prevalence Countries" and "Model 'B' Questionnaire for Low Contraceptive Prevalence Countries," Institute for Resource Development/Westinghouse, Columbia, Md., 1987.

4. Demographic Data for Development, 1986, op. cit. (see reference 1).

Resumen

Los datos de las Encuestas Demográficas y de Salud realizadas en 12 países de Africa, Asia y América Latina muestran que, en 10 de ellos,

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*The WFS and CPS programs asked about calendar rhythm only. In WFS programs, the definition of rhythm used in the knowledge probe was similar to that used in DHS programs. In CPS programs, no standardized probe was used. The effect of different survey techniques on reported levels of knowledge and use has not been ascertained.

las mujeres que han practicado alguna vez la abstinencia periódica son menos del 22 por ciento, mientras que las que actualmente practican este método no llegan al siete por ciento. En Sri Lanka y el Perú, sin embargo, ha practicado alguna vez la abstinencia periódica un 40 por ciento de las mujeres, al tiempo que, respectivamente, un 15 por ciento y un 18 por ciento lo emplea en la actualidad. La enorme mayoría de las que recurren a la abstinencia periódica aplica, para determinar su período fecundo, la técnica del ritmo o del calendario. En siete países, entre la cuarta parte y más de la mitad de las actuales usuarias dicen utilizar durante el mismo mes algún método adicional (por lo común condón o retiro). El problema que las mujeres que han oído hablar acerca de la abstinencia periódica le atribuyen más frecuentemente es su ineficacia, siendo la falla del método la razón más generalmente aducida por las usuarias que han dejado de practicarlo.

En todos los países, resulta más probable que sepan cuándo es su período fecundo las mujeres que han practicado alguna vez la abstinencia periódica, pero aún entre ellas el conocimiento dista de ser universal. Marruecos, Sri Lanka, Colombia, la República Dominicana, Ecuador y el Perú son los únicos países donde al menos la mitad de las mujeres que han usado el método alguna vez pueden identificar correctamente su período fecundo.

Résumé

Les données des Enquêtes de démographie et de santé menées en Afrique, en Asie et en Amérique latine montrent que dans 10 de ces pays, moins de 22 pour cent des femmes ont pratiqué l'abstinence périodique, et moins de sept pour cent la pratiquent actuellement. A Sri Lanka et au Pérou, cependant, 40 pour cent des femmes ont pratiqué l'abstinence périodique, et 15 et 18 pour cent, respectivement, utilisent cette méthode à présent. La vaste majorité des femmes qui pratiquent l'abstinence périodique, utilisent la méthode du rythme (calendrier) pour déterminer leur période fertile; entre un quart et la moitié des utilisatrices actuelles dans sept pays signalent utiliser une méthode additionnelle (généralement le préservatif ou le retrait) durant le mois.

Le problème le plus fréquemment associé à l'abstinence périodique par les femmes qui en ont entendu parler est son inéfficacité. L'échec de la méthode est la raison la plus souvent citée d'abandonner sa pratique. Dans tous les pays, les femmes qui ont pratiqué l'abstinence périodique sont plus susceptibles que les autres de savoir le moment de leur période fertile, mais parmi celles qui l'ont déjà utilisée, cette connaissance est loin d'être universelle: Le Maroc, le Sri Lanka, la Colombie, la République dominicaine, l'Equateur et le Pérou sont les seuls pays où au moins la moitié des femmes ayant déjà utilisé l'abstinence périodique soient capables d'identifier correctement leur période fertile.

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Special Report

Weighing the Evidence on the Pill and Breast Cancer

By Jeanette H. Johnson

Summary

Three new studies have found some connection between oral contraceptive use and breast cancer among women younger than 45. None of the studies find an increased risk of breast cancer among the same subgroups of women, and their results are contradictory. Consequently, a committee advising the U.S. Food and Drug Administration concluded that "the existing data do not support a change in prescribing practices by physicians or in the use of oral contraceptives by women."

One of the three studies, a U.S. hospital-based analysis of breast cancer patients, showed ever-users of the pill to have a statistically significant risk of breast cancer of 2.0 compared with never-users. The relative risk was elevated in virtually all duration-of-use categories. A significantly increased relative risk was also found among ever-users aged 30–34 and 35–39, among those who did not experience menarche until age 14 or older and among those who were parous. No significant difference in risk of breast cancer was found by whether pill use began before or after age 25.

A new analysis of data from the U.S. population-based Cancer and Steroid Hormone Study found no increased risk among parous women or those who had used the pill for less than eight years. However, nulliparous women who had experienced menarche prior to age 13 and had used the pill for eight or more years did have a significantly increased relative risk. Most of the increased risk was confined to women who had begun pill use as teenagers; they had a relative risk of 5.6 compared with never-users.

Researchers from Britain's Royal College of General Practitioners analyzed data on 239 cases of breast cancer that have been diagnosed since they began their study of oral contraceptive use in 1968. The results show that ever-users aged 30–34 at diagnosis had a statistically significant increased risk of 3.3 compared with never-users. Women of parity one had a relative risk of 5.9; there was no increased risk among nulliparous women or those with more than one child.

Introduction

Since the pill first became available in 1960, numerous studies have been conducted to determine what effect its manipulation of the body's normal hormone profile might have on women who use this method of contraception. One of the primary areas of interest has been whether or not estrogen and progestogen—the hormones found in the pill—have any effect on cancers of the reproductive system.

Overall, the news has been more good than bad. Studies finding that oral contraceptives protect women from endometrial cancer have been as unanimous as scientific research can ever be: Women who take the pill for two years have a risk of endometrial cancer of 0.6 compared with never-users of the pill, and those who use it for four years have their relative risk reduced to about 0.4.[1] Researchers have also determined that oral contraceptives protect against ovarian cancer, the relative risk being 0.5 among women who have used the pill for four years.[2] The relationship with cervical cancer is still somewhat of a question. Some evidence exists to show that the risks of cervical dysplasia and carcinoma in situ are elevated after two or more years of pill use, but a consensus remains elusive because few if any of the studies have been free of confounding factors that might bias the results.[3] Some of the same problems with confounding factors exist in studies of the risk of invasive cervical cancer, which appears to be elevated after five years of pill use and may reach a level of 2.0 by 10 years of use.[4]

There is a sense that medical science may have to wait quite a while—until the young women who first took the pill pass through their reproductive years—to see whether the use of oral contraceptives will affect the incidence of breast cancer. The reason is that the disease has a very long latency period and primarily strikes older women. Analyses using U.S. data indicate that at 30 years of age, 28 in every 100,000 women are diagnosed as having breast cancer; at age 50, the incidence is 195 in every 100,000 women, and at age 70, the number rises to 362 women in every 100,000.[5] Because oral contraceptives did not become available until 1960, comparatively few women now older than 60 would ever have used the pill, and women in their 50s could not have taken it early in their reproductive careers. Consequently, most studies of the relationship between the pill and breast cancer have been confined to younger women, whose risk is small and who make up only a small fraction of the breast cancer population.

Nonetheless, an increase in the risk of breast cancer among young women could signal bigger problems to come. Until recently, studies done on women younger than 45 had raised a few cautionary flags regarding the pill's relationship to breast cancer but had been generally reassuring. Researchers had looked at the risk of breast cancer by, among other factors, duration of use, use before or after a first term pregnancy, age when use began, length of time since use was initiated and formulation of pill taken. Also considered in these studies was the susceptibility of the user to an increased risk of breast cancer by virtue of family history or some other condition known to be associated with the disease, such as race, age at menarche, obesity and a history of benign breast disease. Most results were negative and the majority of researchers concluded that pill users over-

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all had no statistically significant increased risk of breast cancer.[6] However, the research indicated that some women—those who used the pill for at least eight years or for several years before a first term pregnancy or before age 25—might experience an increased risk.[7]

In late 1988 and early 1989, researchers were jolted by the results of three new analyses of data for premenopausal women, all of which found some connection between the pill and breast cancer. A hospital-based study indicated that ever-users of the pill have an increased risk of breast cancer, even those who have taken oral contraceptives for fewer than three months.[8] Further results from Britain's Royal College of General Practitioners' Oral Contraception Study showed that the only women who have a significant increased risk are ever-users aged 30–34 and those who have one child at the time their breast cancer is diagnosed.[9] The third analysis, using data from the U.S. Cancer and Steroid Hormone Study, found that ever-users who are nulliparous run an increased risk of developing breast cancer, provided they experienced menarche before age 13 and have taken the pill for eight or more years.[10]

Worldwide, about 55 million women—or approximately 15 percent of contraceptive users—rely on the pill.[11] About 35 million of these women live in the developing world: 22 million in Asia, nine million in Latin America and four million in Africa. Surveys conducted during the 1980s indicate that the pill is most popular in Brazil, Jamaica, Mauritius, Morocco, Thailand and Zimbabwe. In each of these countries, at least 20 percent of currently married women aged 15–44 practicing contraception use the pill. Figures for developed countries indicate that among all women aged 15–44, the pill is the principal method in Australia, Austria, Belgium, Denmark, France, Great Britain, Netherlands, New Zealand, Sweden and West Germany.[12] Although sterilization is the leading method in the United States, the pill is used by about 35 percent of women practicing contraception, and is the leading method among young women and unmarried women.[13]

Although the new analyses contradict each other and the results of many previous research inquiries, the arrival back-to-back of three studies showing positive associations is the cause of much concern. All of the studies come from well-established projects, and all of them are from sources that have published previously on the topic. Consequently, a committee advising the U.S. Food and Drug Administration (FDA) scheduled special hearings to appraise the significance of the findings. In the end, the committee decided the findings were not definitive and recommended against any changes in prescribing practices.[14] However, the committee and the family planning world anxiously await the results of follow-up data from these three sources, other studies yet to be published and new studies about to get under way. Following is a summary of the three studies, the comments of the researchers who presented their results to the committee and the committee's conclusions.

Hospital-Based Study

From 1983 to 1986, breast cancer patients aged 25–44 admitted to 16 hospitals in New York, Philadelphia, Baltimore and Boston were enrolled in a study of the association between oral contraceptives and the risk of a breast cancer diagnosis before age 45.[15] Controls from the same age-group were selected from among patients admitted for nongynecologic and nonmalignant conditions unrelated to oral contraceptive use. Specially trained nurses interviewed the 407 cases and 424 controls while they were hospitalized regarding their health, personal habits and use of medication.

Seventy-two percent of breast cancer patients and 59 percent of controls had ever used oral contraceptives. A multiple logistic regression analysis controlled for the potentially confounding effects of numerous variables, such as age, age at first term pregnancy, parity, age at menarche, family history of breast cancer, body mass, alcohol consumption and religion. Compared with never-users, ever-users were found to have a statistically significant risk of breast cancer of 2.0. The relative risk was consistently elevated for all duration-of-use categories, and was statistically significant for categories of less than three months, 1–4 years, 5–9 years and 10 or more years. The relative risk was approximately 2.0 for most of these categories but rose to 4.1 for women who had used the pill for 10 or more years. However, there was no statistically significant trend of increasing risk with increasing duration of use.

The data were analyzed by five-year age-groups: Ever-users aged 30–34 and 35–39 were found to have significantly increased relative risks of 3.2 and 2.6, respectively. When the analysis was limited to women who had used the pill for five or more years, those aged 30–34 had a significantly increased relative risk of 3.9. There was no evidence that women exposed to the pill before age 25 incurred a higher risk relative to women who did not use it until after age 25. Pill users who had not experienced menarche until age 14 or older were at a statistically higher risk of breast cancer than comparable never-users; an increased risk among pill users who had experienced menarche before age 14 (younger than 12 and 12–13) had an increased risk when compared with never-users in this subgroup, but the increase was nonsignificant.

Ever-users of the pill who were nulliparous had a relative risk of 1.6, but the finding was not statistically significant. Parous women had a significantly increased relative risk whether they had used the pill prior to or following a first term pregnancy; the risks were 2.0 and 2.6, respectively. Only two levels of parity were examined—women who had 1–2 children and those who had three or more children—and at both levels, pill users were found to have statistically significant increased risks.

The Cash Study

In the Cancer and Steroid Hormone (CASH) Study, women whose breast cancer was diagnosed between December 1, 1980, and December 31, 1982, and who were aged 20–54 at the time of detection were ascertained through eight population-based cancer registries maintained by the National Cancer Institute.[16] Controls from the same geographic areas as the patients were selected through random telephone dialing and were matched with breast cancer patients by five-year age intervals. Premenopausal women were selected for the current analysis—2,945 patients and 2,646 controls. The data for nulliparous women and for parous women were analyzed separately by whether menstruation had begun before age 13 or after, by whether the cancer diagnosis had occurred before age 45 or after and by how long pill use had lasted (fewer than four years, 4–7 years, 8–11 years or 12 years or more). Among parous women, oral contraceptive use applied only to that which had occurred prior to a first full-term pregnancy; duration of pill use and length of use before a first pregnancy were highly correlated, however.

No increased risk was found among women who had used the pill for fewer than eight years, but the researchers found that nulliparous women who had experienced menarche before age 13 and had used the pill for 8–11 years were 2.7 times more likely to have breast cancer before age 45 than were nulliparous women who also had experienced an early menarche but had never used the pill. Women with these characteristics who had used the pill for 12 or more years had a risk of breast cancer before age 45 that was 11.8 times that of never-users. Both these findings were statistically significant. Pill users with similar characteristics were at a decreased risk of breast cancer at age 45 or older compared with never-users. Few women at that age had used the pill for eight or more years, however, and the findings were not statistically significant. None of the findings for nulliparous women who had begun menstruating at age 13 or older and who had used the pill for eight or more years were statistically significant. The findings were also nonsignificant among parous women, regardless of age at menarche; few parous women had been long-term users of the pill, however.

To determine whether early use of oral contraceptives might have influenced the findings among their high-risk group, the researchers analyzed the relative risk of breast cancer before age 45 by whether long-term use had begun during the teenage years or at ages 20 and older. Nulliparous women with an early menarche who had begun long-term pill use as teenagers had a risk of 5.6 compared with similar never-users, and the risk was statistically significant. For those who had begun use later, the relative risk of 2.6 was of marginal significance (95 percent confidence interval, 1.0–6.9).

The researchers suggest that women who experience menarche before age 13 and remain nulliparous may be at increased risk of developing early breast cancer if they use oral contraceptives for eight years or longer. The risk appears to be greatest for those who begin taking the pill as teenagers. Because risk was not increased among all pill users and because it remained unchanged when adjusted for the tendency of physicians to examine pill users more frequently, the researchers believe that the findings may point to a promotional effect in which the pill advances the onset of breast cancer in susceptible women by a few years but does not change the level of breast cancer risk among all women. The researchers also point out that the high-risk group is a very small proportion—slightly more than one percent—of breast cancer patients; only 39 of the almost 3,000 patients in the study had had breast cancer detected prior to age 45, were nulliparous, had experienced menarche early and had used oral contraceptives for eight or more years.

The Royal College Study

Researchers from Britain's Royal College of General Practitioners began a study of oral contraceptives in 1968 with the enrollment of some 23,000 pill users and a like number of controls.[17] The study enrolled only married women or women living as married. Some 18,000 women remained in the study as of March 1985, when data on breast cancer risk among enrollees were analyzed; 239 cases of breast cancer were diagnosed during the accumulation of approximately 407,000 woman-years of data between 1968 and 1985.

The data, which were standardized for parity, social class and smoking habits, indicated that neither current users nor former users of the pill had a statistically significant increased risk of breast cancer when compared with never-users. Consequently, the two were grouped together as ever-users for most of the remaining analyses. For an examination of the risk of breast cancer by age at diagnosis, the women were categorized by five-year age-groups ranging from younger than 24 to 60–64.

Twenty-six cases of breast cancer had been diagnosed among women aged 30–34, and ever-users in this age-group were found to have a statistically significant increased risk of 3.3 compared with never-users. The relative risks in all other age-groups were nonsignificant. An analysis by parity at the time of diagnosis (0, 1, 2–3 and 4 or more children) also found one group to have a statistically significant increased risk of breast cancer—pill users with one child had a relative risk of 5.9. The results also indicated that women who had begun using the pill before age 25 had no higher risk of breast cancer than women who had begun using it at a later age.

Among all participants in the study, there was no evidence of a trend toward increased risk of breast cancer with increased duration of pill use. However, a significant trend emerged when the analysis was confined to women with one child at the time of diagnosis, and the elevation of risk began among those who had used the pill for as little as 2–3 years. An upward trend among the other group found to have an increased risk of breast cancer—women aged 30–34 at the time of diagnosis—was present but was not significant.

An analysis of former users of the pill found a significant trend toward greater risk of breast cancer with years since the method was last used, evidence perhaps of a latency period. A statistically significant increased risk began with 4–5 years since last use and peaked at 1.9 with 10 or more years since last use. Restricting the analysis of former users to women aged 30–34 at the time of diagnosis showed a steep increase in relative risk that became significant with 6–7 years since last use and that reached a peak of 15.8 at 8–9 years. Women who had one child at the time of diagnosis experienced a similar significant trend of increasing risk with the passage of time, the risk peaking at 13.2 after 10 or more years had passed since last pill use.

Like the CASH investigators, the Royal College researchers suggest that their data can be interpreted to indicate that the pill accelerates latent cancer rather than initiates cancer. They base their speculation on two findings. Women of parity one showed a significantly increased risk after only two years of pill use, yet cancer is believed to take many more years to develop. In addition, women aged 30–34 at diagnosis had been pinpointed as a group at increased risk in an analysis of data published by the Royal College in 1981.[18] The women aged 30–34 at that time were 35–39 in this most recent analysis, yet that age-group showed no increased risk of breast cancer, indicating that the cancers may merely have presented earlier than expected rather than increased in number.

The researchers calculate that the increased risk found for women aged 30–34 would be the equivalent of 14 breast cancer cases annually per 100,000 women, or one case of breast cancer each year for every 7,000 ever-users of the pill.

Evaluating the Results

One of the problems with evaluating not only these three studies but also those done before is that there is no one protocol followed by all of them, as was pointed out at the FDA committee hearing by James J. Schlesselman, a professor in the Department of Preventive Medicine and Biometrics at the Uniformed Services University of the Health Sciences, Bethesda, Maryland. To give but a few examples, researchers select their control groups differently; the factors they choose to examine are not the same; the age that is considered early for menarche is categorized variously; early pill use is defined sometimes as that occurring before age 20 and sometimes as that occurring before age 25; and some studies look only at nulliparous as opposed to parous women while others have a larger number of categories for parity. Overall, Schlesselman said, he was not reassured by the data presented, but he was not alarmed either.

Clifford Kay, director of the Royal College study, speculated on why his study had pinpointed an increased risk among pill users of parity one. He suggested that the pill was negating the protective effect against breast cancer that first pregnancies normally provide to a woman, but not the protective effect conferred by additional pregnancies. Kay noted that even if his results were to be confirmed, the level of risk "might possibly be an acceptable one if you bear in mind the other benefits of the pill and, of course, the overwhelming benefit of effective contraception."

Samuel S. Shapiro, director of the Slone Epidemiology Unit at Boston University School of Medicine and one of the researchers involved in the hospital-based study, told the committee that "we are all highly confused by the contradictory findings." He acknowledged that the increased risk of breast cancer after short periods of pill use—particularly after less than three months of use—was a finding of his study that was "biologically implausible. I take it as evidence of some bias in our study." He suggested that one area of possible bias is selective diagnosis of breast cancer among oral contraceptive users; women taking the pill may be screened for breast cancer more frequently than women who are not on the pill.

Jeffrey Perlman, chief of the Contraception Evaluation Branch of the National Institute of Child Health and Human Development, testified that there has been an increase in the incidence of breast cancer in the United States since the pill came on the market. However, he said that the breast cancer rates are considerably below what would have been seen if all oral contraceptive users had a risk that was twice that of nonusers, as the hospital-based study indicated. In fact, Perlman added, even without the pill, there would have been an increase in the incidence of breast cancer among young women. He said that delayed childbearing has been the reason for much of the increased risk.

Data from the National Cancer Institute indicate that the incidence of breast cancer has been increasing by more than one percent each year—from about 90 cases per 100,000 white females in 1975 to 104 per 100,000 in 1985.[19] Some of this increase may be due to an increase in screening activities and attention that has grown out of publicity surrounding breast cancer diagnosis among prominent women. However, one analysis has shown how later age at first pregnancy, which is known to be associated with a higher risk of breast cancer, may also contribute to changes in the incidence of the disease.[20] The analysis notes that 71 percent of white women born in the United States between 1935 and 1939 had had at least one child by age 25, whereas only 49 percent of white women born between 1950 and 1954 had had at least one child by that age. Consequently, in comparison with the women who are 15 years older, the younger cohort is expected to have a risk of breast cancer of 1.1, or about 70,000 more cases of breast cancer than they would have experienced if 71 percent of them had borne a first child by age 25.

Bruce Stadel, acting chief of the Epidemiology Branch of the Food and Drug Administration and lead author of the CASH analysis, said he was not prepared, on the basis of his and other findings, to say that an increase in risk "is what happens. Rather the findings are suggestive of directions for further analysis." All three research projects will be continuing sources of data, and at least one other large-scale study will be launched by the National Cancer Institute. That study is expected to enroll 1,000 cases and an equal number of controls, with collection of data scheduled to be complete in 1992.

Many committee members as well as others who spoke from the fields of gynecology and reproductive health seemed to indicate that if conflicting results forced them to choose between a smaller case-control study that found an overall increase in risk and a larger population-based study such as CASH that did not, they would give more weight to the results of the latter. Consequently, the statement issued by the committee at the end of the hearing said that "in consideration of the total population of breast cancer cases and controls that have been reviewed in various studies, the overall risk of breast cancer in relation to oral contraceptive use is approximately 1.0; that is, there is no apparent association between oral contraceptive use and breast cancer."[21]

The committee added, however, that certain subgroups of women who use oral contraceptives may be at increased risk, including those who begin using the pill early in their childbearing years, those who use it for an extended period of time and those who use oral contraceptives prior to their first pregnancies. The committee emphasized that these findings "only occur in some studies and that other large studies have shown no such possible associations." It concluded, "The existing data do not support a change in prescribing practices by physicians or in the use of oral contraceptives by women."

The statement also recommended more basic research on the biology of the human breast, as well as large clinical studies of pill users. One of the weaknesses of the three recent analyses, as well as prior research, is that most of the women involved have taken older formulations of the pill that contain higher doses of hormones than do the pills currently marketed.

References

1. J. J. Schlesselman, "Cancer of the Breast and Reproductive Tract in Relation to Use of Oral Contraceptives: A Review of Human Studies," submitted for publication in *Obstetrics & Gynecology.*

2. Ibid.

3. Ibid.

4. Ibid.

5. National Cancer Institute, *Annual Cancer Statistics Review, Including Cancer Trends: 1950–1985,* National Institutes of Health, Bethesda, 1988.

6. J. J. Schlesselman, op. cit. (see reference 1).

7. Ibid.

8. D. R. Miller et al., "Breast Cancer Before Age 45 and Oral Contraceptive Use: New Findings," *American Journal of Epidemiology,* **129**:269, 1989.

9. C. R. Kay and P. C. Hannaford, "Breast Cancer and the Pill: A Further Report from The Royal College of General Practitioners' Oral Contraception Study," *British Journal of Cancer,* **58**:675, 1988.

10. B. V. Stadel et al., "Oral Contraceptives and Premenopausal Breast Cancer in Nulliparous Women," *Contraception,* **38**:287, 1988.

11. W. P. Mauldin and S. J. Segal, "Prevalence of Contraceptive Use: Trends and Issues," *Studies in Family Planning,* **19**:335, 1988.

12. E. F. Jones et al., "Unintended Pregnancy, Contraceptive Practice and Family Planning Services in Developed Countries," *Family Planning Perspectives,* **20**:53, 1988.

13. J. D. Forrest and R. R. Fordyce, "U.S. Women's Contraceptive Attitudes and Practice: How Have They Changed in the 1980s?" *Family Planning Perspectives,* **20**:112, 1988.

14. Fertility and Maternal Health Drugs Advisory Committee, "Summary Minutes," Rockville, Md., Jan. 5–6, 1989.

15. D. R. Miller et al., 1989, op. cit. (see reference 8).

16. B. V. Stadel et al., 1988, op. cit. (see reference 10).

17. C. R. Kay and P.C. Hannaford, 1988, op. cit. (see reference 9).

18. Royal College of General Practitioners, "Breast Cancer and Oral Contraceptives: Findings in Royal College of General Practitioners' Study," *British Medical Journal,* **282**:2089, 1981.

19. National Cancer Institute, 1988, op. cit. (see reference 5).

20. E. White, "Projected Changes in Breast Cancer Incidence Due to the Trend Toward Delayed Childbearing," *American Journal of Public Health,* **77**:495, 1987.

21. Fertility and Maternal Health Drugs Advisory Committee, 1989, op. cit. (see reference 14).

DIGEST

Only 11 Percent of Senegalese Women Practice Birth Control: Most Popular Method Is Abstinence

Despite recent slight declines, fertility and mortality levels remain very high in Senegal, and the population is growing at an annual rate of 2.6 percent. Early and almost universal marriage are the norm in this predominantly Muslim country. Although women want large families, a substantial proportion say they would like to limit or space their births. Nevertheless, contraceptive prevalence is low, and modern methods of contraception are used almost exclusively by educated, urban women. These are some of the highlights of the Enquête Démographique et de Santé au Sénégal (EDS), carried out in 1986 among a sample of 4,415 women aged 15–49; data from a sample of 635 children aged 6–36 months were also collected.[1]

Senegal is a low-lying West African country of 6.7 million inhabitants; it is bordered by Mauritania to the north, Mali to the east, Guinea to the south and the Atlantic Ocean to the west. Although its population is predominantly rural, exodus from the countryside is swelling the size of the urban population at a rate of five percent annually. The Wolof are Senegal's largest ethnic group, followed by the Poular, the Serer, the Diola and the Mandingue. Eighty-five percent of the population are Muslim, and polygamy is practiced extensively by the Senegalese.

Overall, 77 percent of Senegalese women have had no schooling, 14 percent have received a primary education and nine percent have attained a secondary education. However, there are large differences in educational level according to residence: Forty-six percent of urban women have obtained some schooling but only seven percent of rural women have done so. In the western region (which includes Dakar, the capital), 35 percent of women are literate, compared with 17 percent of women who reside in the southern region and seven percent of those in the central region.

Nuptiality and Fertility

In 1986, the median age at marriage among Senegalese women 20–49 was 16.6. Between the 1978 Senegal Fertility Survey and the 1986 EDS, the median increased by one year among women in all age-groups, except those aged 45–49. Educational level appears to be the most important determinant of age at marriage: Women who have attended secondary school marry three years later than do those who have attended primary school only, and they marry five and one-half years later than do those who have had no education. On average, urban women marry later than rural women (17.6 years vs. 16.0 years), and the difference in median age at marriage among older and younger urban women is quite pronounced (15.9 among 45–49-year-olds vs. 18.8 among 25–29-year-olds).

By their middle 30s, all Senegalese women have married at least once. The proportion of ever-married women rises from 44 percent of 15–19-year-olds to 97 percent of 30–34-year-olds and 100 percent of 35–39-year-olds. However, in recent years there has been a trend toward slightly later marriage: In 1978, 59 percent of women aged 15–19 were ever married, a proportion 14 percentage points higher than that of 1986. Divorce and remarriage are common occurrences in Senegal: Among the women sampled in 1986, 29 percent were no longer in their first unions, but 90 percent of these women had remarried.

Although the practice of polygamy remains widespread, the proportion of married women living in polygamous unions has declined slightly since 1978, from 49 percent to 47 percent. Urban women are less likely than rural women to be in polygamous unions (41 percent vs. 49 percent). Further, the proportion of women in such unions decreases as educational level increases, from 49 percent of women with no education to 36 percent of those with a primary education and 27 percent of those with a secondary education.

In 1986, the total fertility rate (TFR) among women aged 15–44 was 6.4 births per woman, down from 7.0 per woman in 1978. The decline in the overall TFR between 1978 and 1986 was due primarily to a drop in fertility levels among urban and educated women under the age of 30; among rural and uneducated women and among those over 30, fertility remained basically unchanged during this period. On average, rural women have almost two more births than urban women (7.1 vs. 5.4), and uneducated women have nearly twice as many births as educated women (6.8 vs. 3.7).

Overall, 26 percent of all married women were exposed and 74 percent were not exposed to the risk of pregnancy at the time of the survey. The proportion of exposed women was highest among those aged 15–19 (41 percent) and lowest among those aged 45–49 (18 percent). Fifteen percent of all married women were pregnant, 19 percent were infertile, nine percent had not had a period in the eight weeks preceding the survey and 32 percent had postpartum amenorrhea. The average duration of postpartum amenorrhea—16 months—is longer than that in any other Sub-Saharan country. The length of this period is mainly attributable to the practice of prolonged breastfeeding (lasting for 19 months, on average). However, nonliterate rural women breastfeed 4–5 months longer than do their literate urban counterparts, and their menses return 5–8 months later. Although age is not a factor in the length of time a woman breastfeeds, it is a factor in the observance of postpartum abstinence: Women under 30 practice postpartum abstinence two months longer, on average, than do older women (8.6 months vs. 6.6 months).

Senegalese women continue to want

large families, although the ideal family size among married women declined from 8.8 children in 1978 to 7.2 in 1986. Urban women want 5.5 children, on average, and rural women want 7.6. Women who have had no schooling want substantially more children than do those with a primary or secondary education (7.4 children vs. 5.6 and 4.5, respectively).

Nineteen percent of married women say they do not want any more children, with the proportion increasing from two percent of women with no children to 62 percent of women with six or more children. Among the 81 percent of married women who want more children, 40 percent say they want to wait at least two years before their next birth. When infertile women and women who are currently practicing contraception are excluded from these categories, the results show that 12 percent of married women are in need of family planning for limiting births and 25 percent are in need for purposes of spacing births. Among potential limiters, four percent say they intend to use contraceptives; among potential spacers, 11 percent say they will do so.

Contraceptive Knowledge and Use

The proportion of all women who knew of at least one contraceptive method grew from 60 percent in 1978 to 90 percent in 1986. During the same period, the proportion of all women who were familiar with at least one modern method tripled, from 23 percent to 69 percent. Of the modern methods, more than half of all currently married women have heard of female sterilization and the pill; fewer than one-third have heard of the IUD, injectables and condoms; and fewer than one in 10 are familiar with vaginal methods and vasectomy. Prolonged abstinence is the best-known traditional method of contraception, followed by the use of *gris-gris* (charms) and medicinal plants and the practices of periodic abstinence and withdrawal. Both education and urbanization have a positive impact on the likelihood that a woman will be familiar with a modern method, and over 80 percent of all women who are familiar with a modern method know where they can go to obtain it.

Although the proportion of married women who practice contraception has tripled since 1978, only 11 percent of women currently use contraceptives. Nine percent rely on traditional methods (mainly prolonged abstinence), while only two percent rely on modern methods. Modern methods are used almost exclusively by urban, educated women between the ages of 25 and 39. One percent of all users take oral contraceptives, the most commonly used modern method.

When women not practicing contraception were asked their future intentions, 12 percent said they would start using a method within a year, 12 percent said they would consider doing so later or were not sure and 77 percent said they did not intend to use a method. Of the women who said they would start using contraceptives in the coming year, 57 percent said they would use a modern method (32 percent, the pill; 12 percent, injectables; eight percent, the IUD; and four percent, female sterilization), and 43 percent said they would use a traditional method (mainly abstinence or gris-gris).

Maternal and Child Health

Overall, more than 60 percent of the women who had had a child in the five years preceding the survey had consulted a health practitioner at least once during their pregnancy. However, whereas almost all urban and educated women had made a prenatal visit, only 46 percent of rural women and fewer than 60 percent of uneducated women had done so. Only 41 percent of all women delivered their babies in a health facility, while 58 percent delivered at home—with 26 percent using a traditional birth attendant, 26 percent being assisted by neighbors or relatives and six percent getting no assistance.

Despite a post-1975 decline of 28 percent in the infant mortality rate and one of 40 percent in the child mortality rate, levels of early mortality in Senegal remain among the highest in Africa. The infant mortality rate for 1981–1985 was 86 deaths per 1,000 infants. About one Senegalese child in five dies before the age of five. The infant mortality rate is considerably higher among women who bear a child before age 20 than among those who bear one after that age, and children who are born fewer than two years after the preceding child are twice as likely to die as those who are born four or more years after. Moreover, the likelihood of dying is about two times higher among rural children than among urban children, as well as among the children of nonliterate mothers when compared with those of literate mothers.

It is estimated that a quarter of all Senegalese children suffer from chronic malnutrition. Further, diarrhea among children is very prevalent: Almost 40 percent of all children under five had had an episode of diarrhea in the two weeks preceding the survey, yet only seven percent of mothers had recourse to oral rehydration therapy. Malaria also poses a serious threat to children's health: Half of those under five had the disease during the winter preceding the survey; 93 percent of these cases were treated.

Reference

1. Ministere de l'Economie et des Finances, Direction de la Statistique, *Enquête Démographique et de Santé au Sénégal 1986*, Division des Enquêtes et de la Démographie, Dakar, and Institute for Resource Development/ Westinghouse, Columbia, Md., 1988.

AIDS Education Is Found To Improve Condom Use By Prostitutes in Kenya

Within six months of the initiation of a simple intervention program in Nairobi that presented community forums on preventing sexually transmitted diseases (STDs) and offered free condoms to prostitutes, occasional condom use quadrupled among prostitutes who were individually counseled about human immunodeficiency virus (HIV) and AIDS and tripled among those who only attended the forums. Concomitantly, occasional use more than doubled among prostitutes who could not avail themselves of the free condoms. Prostitutes who attended the forums were more likely to use condoms than were those who had not participated. Eight in 10 counseled prostitutes said they would refuse clients who would not use a condom, compared with only five in 10 of the others. The investigators who conducted the study conclude that a simple, inexpensive intervention can potentially reduce women's risk of acquiring AIDS.[1]

In January 1985, researchers registered 595 prostitutes from an impoverished area of Nairobi to attend a primary health care clinic at least once every six months for STD diagnosis and treatment. For a smaller study on condom use, the researchers identified 161 women from the original sample who had attended any one of three community meetings (called *barazas*) on preventing the spread of STDs, HIV and AIDS that were held between November 1985 and November 1986. In May 1986, 94 of these prostitutes received individual education on HIV and AIDS and were informed of their HIV status; the remaining 67 women received no individual education but were informed of their HIV status when they reported to the clinic for a screening. In the following month, the clinic began providing free condoms. In October, the researchers recruited 205 more prostitutes to serve as a control group; although some of these women had attended a baraza, they had had no direct access to free condoms until they registered with the clinic. In November 1986, trained interviewers queried all participants about the frequency of their past and current condom use.

The three groups of women were of similar mean age (between 30 and 33). However, those who received individual counseling had practiced prostitution for an average of 45 months, at least nine months longer than either of the other groups. The controls averaged six partners daily, while the other prostitutes averaged four. Both the counseled women and the noncounseled clinic group had attended two barazas, on average, while the controls had attended one.

Only 7–10 percent of the prostitutes reported ever having used condoms before 1985. By the end of 1986, however, 81 percent of the counseled prostitutes, 70 percent of the noncounseled clinic group and 58 percent of the controls reported having used them occasionally. Among these users, frequency varied slightly: Counseled prostitutes used condoms during an average of 39 percent of their encounters, women in the other clinic group did so 35 percent of the time and controls used them 26 percent of the time. Nineteen percent of those who were individually counseled reported that they had never used condoms, compared with 30 percent of the noncounseled clinic attendees and 42 percent of the controls. Among all the prostitutes who had used condoms, 34–44 percent reportedly used a condom with fewer than half of their clients, 21–26 percent used one with more than half, and only 3–11 percent used a condom with every client. The most frequently given reason for condom use by women in each group was concern for their health and avoidance of HIV and AIDS.

Those groups with free access to condoms were significantly more likely both to have proposed that their clients use a condom and to have provided the device themselves: Among the prostitutes who used condoms, the counseled women initiated condom use in 78 percent of their encounters, compared with 64 percent among those who were in the noncounseled group and only 59 percent among the controls. In addition, the counseled and noncounseled prostitutes provided the condoms in 58–59 percent of the instances in which they were used, compared with 40 percent among the controls. Significantly more individually counseled prostitutes (80 percent) claimed they would refuse to have sex with a man who would not wear a condom than did noncounseled prostitutes (51 percent) or those in the control group (52 percent).

Regression analysis indicated that attendance at barazas was the only variable significantly associated with condom use. No other variables—whether the woman received individual counseling, whether she attended the clinic regularly for screening or only when a health problem arose, how long she had been a prostitute, how many sexual partners she had per day or whether she had been refused by a client—were associated with condom use. Women infected with HIV were as likely to use condoms currently as were the uninfected.

Although condom use increased substantially among the counseled and noncounseled women, it also rose among the controls. The researchers do not claim that attendance at the barazas led to this increased use of condoms among the controls; they surmise that, in an atmosphere of "vigorous discussion" about AIDS in Kenya, there may have been "a 'spill over' effect from informal contacts" among the women in all the groups, resulting in an increase in condom use among the controls. They conclude, however, that while the barazas appeared effective, "judging by the onset of use, making condoms easily available seemed in itself to be an extremely effective measure in increasing condom use." Nevertheless, they consider their findings to be "evidence that public education programmes on AIDS in Africa can effect important changes in sexual behaviour that reduce the risk of transmission of HIV."

Reference

1. E. N. Ngugi et al., "Prevention of Transmission of Human Immunodeficiency Virus in Africa: Effectiveness of Condom Promotion and Health Education Among Prostitutes," *Lancet*, **8616**:887, 1988.

Iran's Rate of Population Growth—Nearly Four Percent Annually—Is One of World's Highest

Iran now has a population of over 50 million, and its annual growth rate is among the highest in the world. A heavy flow of immigrants into the country, high levels of fertility and falling mortality rates have outweighed population losses due to war and emigration, according to Mehdi Amani, a researcher who analyzed preliminary data from Iran's 1986 census.[1] While early and universal marriage remain the norm in Iran, the average age at marriage is rising among women and falling among men.

Iran's population is predominantly young (46 percent under age 15) and is growing at a rate of at least 3.7 percent annually. Between 1966 and 1986, the population almost doubled, from 25.8 million to 49.9 million. Amani estimates that based on the annual rate of population growth between 1976 and 1986, Iran's population should reach almost 54 million in 1988.

In 1986, the crude birthrate was about 43 births per 1,000 population, and the crude mortality rate was approximately 12 deaths per 1,000. The ratio of infants under five to women aged 15–44 (0.93) is higher than that in West Africa (0.87), and indicates that Iran has very high levels of fertility.

Fifty-five percent of the population live in urban centers, compared with 39 percent 20 years ago. Almost half of the urban population is concentrated in the 10 largest cities; Teheran, the nation's capital, has a population of over six million. Overall, the average household size is over five, but urban households are smaller than rural ones (4.8 vs. 5.5 persons).

By ages 50–54, 99 percent of Iranians have been married. Iranian women have always married young; however, their average age at marriage rose from 18.6 in 1956 to 19.9 in 1986. During the same period, the average age at marriage among men declined from 25.5 to 23.8. According to Amani, later marriage among women is attributable to increasing education (only seven percent of women were literate in 1956, compared with over 50 percent in 1986), while earlier marriage among men is a consequence of the return to traditional family values espoused by the Islamic revolution.

The researcher notes that the actual size of Iran's population surpasses earlier population projections made by the United Nations and the Iran Statistics Center. Although there are no precise data on fertility, emigration, immigration and deaths due to war, he speculates that most of the "excess" population results from the influx of Afghans fleeing war in their own country and, to a lesser extent, from a rise in fertility levels (in the absence of family planning).

Reference

1. M. Amani, "La population de l'Iran au recensement de 1986," *Population*, 3:537, 1988.

Paraguay: Few Changes Found in FP Practice or Fertility in Past 10 Years

Fertility levels and contraceptive prevalence in Paraguay have remained virtually unchanged since the late 1970s. The total fertility rate (TFR) is 5.4 lifetime births per woman, fewer than four in 10 married women use effective birth control methods and at least one in five women are in need of family planning services. Married women most frequently rely on oral contraceptives, but second in popularity, in the capital as well as the countryside, are native herbs that have no proven contraceptive effect. The majority of women who practice birth control obtain their contraceptives from pharmacies, a change from their previous reliance on government family planning services, which were suspended in 1979. According to the authors of a recent fertility survey report, Paraguay's fertility trend is consistent with that of a very limited public-sector family planning program.[1]

The Centro Paraguayo de Estudios de Población (CEPEP), the International Planned Parenthood Federation affiliate in Paraguay, conducted the Paraguay Family Planning Survey in the spring of 1987 with assistance from the U.S. Centers for Disease Control. Paraguay is divided into two regions—the sparsely populated Occidental region (which was excluded from the study) and the Oriental region, where 98 percent of the country's people live. For the study, an equal number of households were obtained from two areas of the Oriental region—metropolitan Asunción and the Interior. Interviewers gathered data from 2,224 women aged 15–44 of all marital statuses, almost two-thirds of whom were currently married.

Fertility and Breastfeeding

The current TFR is 5.4 lifetime births per woman; this is a decrease from 6.3 in 1977 (estimated from a Contraceptive Prevalence Survey) but an increase from 4.9 in 1979 (estimated from the World Fertility Survey). However, an analysis of survey data from the 1970s revealed the 1977 TFR to have been overestimated. Furthermore, the apparent increase in TFR between 1979 and 1987 may be exaggerated, according to the authors, because of response errors and sample size constraints in the latter survey. Nevertheless, they note that the current TFR in Paraguay is surpassed by only four other Latin American countries—Bolivia, Guatemala, Honduras and Nicaragua.

The mean parity per woman is 2.2, a decrease of 0.4 from the 1977 level of 2.6. Between 1977 and 1987, mean parity diminished by 0.6 children among women living in the Interior, while mean parity among women in Asunción increased by 0.3 children (from 1.3 children to 1.6 children) during the same period. Women living in the Interior have one more child (2.5 children per woman), on average, than those living in Asunción (1.6 children per woman); the largest differentials, as great as two children per woman, occur among women older than 30.

Most Paraguayan mothers breastfeed their children, and the average duration is 12.7 months, virtually unchanged from what it was in 1979. Women with the least education breastfeed for almost twice as many months as do women with more than a primary education, and those living in Asunción breastfeed for an average of five months less than do women in the Interior. Postpartum amenorrhea persists for an average of 7.6 months, but lasts for three months less among women in the capital than among those in the Interior. Women with less than a primary education experience postpartum amenorrhea for almost twice as many months as do women with more than a primary education.

Eighty-three percent of the women who had a pregnancy within five years of their interview say it was planned—an increase from 71 percent in 1977. The authors explain that the increase is the result of an improved ability among couples to space pregnancies; mistimed pregnancies account for 12 percent of the total number of pregnancies, a decrease from 24 percent in 1977. Four percent of the women report that their most recent pregnancy was unwanted, a very slight decrease from 1977, the remainder could not classify the status. The distribution of the planning status of pregnancies does not differ between women living in the capital and those living in the Interior.

Contraceptive Use and Unmet Need

Thirty-eight percent of currently married women use a family planning method with some recognized efficacy, and seven percent of the women report using native herbs called *yuyos*, which have no proven contraceptive effect. Only 29 percent of currently married women use a modern contraceptive such as the pill (14 percent), the IUD (five percent), sterilization (four percent), injectables, (four percent), condoms (two percent) or vaginals (half of one percent); withdrawal and rhythm are used by nine percent.

Whereas over half of women living in Asunción use a method of birth control that has some recognized efficacy, fewer than one-third of women living in the Interior do so. Oral contraceptives are the most prevalent method in both areas, followed in popularity by the IUD among women living in the capital and sterilization among women in the Interior. Contrary to the investigators' expectations, almost twice as many women in Asunción as women living in the Interior report using yuyos (11 percent vs. six percent).

Among married women, contraceptive prevalence varies by age and number of living children: Use of methods with some recognized efficacy ranges from 23 percent among 15–19-year-olds to 43 percent among 25–29-year-olds and from 15 percent among women with seven or more children to 52 percent among those with two children. Twenty-six percent of women with less than a primary education use such methods, a proportion that increases to 61 percent among those with more than a primary schooling. Twenty-four percent of women who only speak Guarani (the principal language for one-third of the sample) practice contraception, compared with 58–61 percent among those who rely solely on Spanish or another language. Use of yuyos is highest among women 15–24-years-olds and among those 40 and older. Women who speak Guarani are more likely to use native herbs than are women who speak Spanish or another language. The prevalence of herb use increases with number of living children and decreases with education.

The proportion of married women who employ a method other than yuyos increased nine percentage points over 10 years. The increase was primarily in the use of modern contraceptives, particularly oral contraceptives and injectables. Nevertheless, this improvement, which was accompanied by a very slight increase in breastfeeding duration, did not result in diminished fertility because of an accompanying six-month decrease in the singulate mean age at marriage.

An incident that seriously affected family planning in Paraguay occurred in 1979, when the country withdrew from the program of bilateral support with the United States Agency for International Development and consequently discontinued distribution of contraceptives through its government health program. Currently, the primary suppliers of contraceptives for married women are pharmacies (the source for 51 percent), followed by CEPEP clinics (14 percent) and private physicians or clinics (12 percent). Other sources are private and public hospitals, health centers, marketplaces, churches and friends. Pharmacies supply oral contraceptives to three-quarters of women who use that method; CEPEP clinics and private physicians or clinics provide IUDs to about three-quarters of women who use them. Public hospitals are the primary site for sterilizations (for medical reasons only) among the small proportion of women who are sterilized.

The authors classified women (regardless of marital status) as being in need of family planning services if they were fecund, sexually active, neither pregnant nor interested in becoming so and either using yuyos or relying on no birth control at all; almost one-quarter (23 percent) of Paraguayan women are thus classified as in need. A greater proportion of women living in the Interior (26 percent) than those living in Asunción (15 percent) fall into this category. Of all women in need, the majority speak only Guarani (57 percent), have less than a complete primary education (61 percent), are unemployed (79 percent) or live in the Interior (80 percent).

The authors conclude that family planning program efforts targeted to women in the Interior could potentially have the greatest impact on contraceptive prevalence in Paraguay. Furthermore, they maintain that "if the availability of services and of modern and effective contraceptive methods were to be increased," a significant proportion of women, regardless of their current contraceptive practice, would utilize modern methods. According to them, family planning program efforts should initially emphasize reversible contraceptive methods, in part because only one-third of women who want to limit childbearing would consider obtaining a sterilization. Since only 35 percent of the women express an interest in community-based distribution (CBD) of contraceptives, the authors suggest that family planning services should initially be offered in a clinic setting. However, they think that with greater understanding of and knowledge about CBD programs, it is possible to increase acceptance of such programs.

Reference

1. R. S. Monteith et al., "Contraceptive Use and Fertility in Paraguay, 1987," *Studies in Family Planning*, 19:284, 1988.

African AIDS Epidemic Expected to Have Only Moderate Impact on Population Growth Rate

As many as two percent of Central African adults could annually become infected with the human immunodeficiency virus (HIV) by the year 2000, with almost as many dying annually of AIDS, according to projections from a mathematical model for forecasting the spread of HIV and the demographic impact of AIDS.[1] However, even a severe AIDS epidemic in which one in five adults is infected would not come close to halting Africa's rapid population growth: The model suggests that in a worst-case scenario, an African society's annual growth rate might only be halved. Although death rates among adults and children under the age of five would increase substantially, the current age distribution of the population, in which children and young adults represent a sizable share, would remain relatively unaltered.

The true current incidence and prevalence rates of HIV and AIDS in Africa are uncertain, nor is it known how infectious HIV is or how readily it is spread. However, John Bongaarts, director of research at The Population Council, constructed a mathematical model to simulate, over a period of several decades, both the anticipated increases in the incidence and prevalence of HIV infection and the annual number of deaths that can be expected in a severely affected Central African population. The model relies on over 30 input parameters related to the disease's progression, the risk of sexual or nonsexual transmission and the population's demographic structure and sexual behavior.

The model distinguishes three age-groups—birth to age 15 (the presumed age of initiating sexual activity), age 15 to marriage and marriage to death. Regardless of their marital status, adults are treated as having either many sexual partners (high sexual mobility) or few (low sexual mobility). In addition, it is assumed that except for women with high mobility, sexual partners share the same cohort, no medical interventions will change the risk of HIV infection or the disease's progression, and sexual behavior will remain unchanged throughout the course of the epidemic. (Intravenous drug use and homosexuality are excluded as factors in the Africa analysis because they do not appear to contribute significantly to the epidemic there. Bongaarts notes, however, that this model cannot be appropriately applied to non-African populations if parameters that address these modes of transmission are not included.) The point of departure for the computer simulation is 1975. The model forecasts that the spread of AIDS and the disease's demographic impact will stabilize after about 25 years, and the analysis is thus limited to that time-frame.

At least one million Africans adults are now estimated by the World Health Organization to be infected with HIV, and the number could actually be as high as two or three million. Such an estimate suggests that one percent of adults are infected with HIV. The model projects that starting in 1975, the annual proportion of African adults 15–65 years old who become infected with HIV (the HIV incidence) would rise rapidly: By the 15th year of the epidemic, approximately 2.5 percent of all adults would become infected by HIV each year, an incidence level expected to stabilize at 2.2 percent in the 25th year. The total proportion of adults infected (the HIV prevalence) would rise rapidly for the first 15 years and then approach equilibrium by year 25, with prevalence levels at the zenith around 20 percent among all adults, almost 60 percent among male partners of prostitutes and almost 80 percent among prostitutes.

Nearly a decade after the plateau in the annual incidence of HIV infection is reached, the incidence of AIDS cases would be expected to peak at slightly more than 1.5 percent per year of the adult population (based on an average incubation period of 9.3 years between infection and the appearance of the syndrome). This peak would be closely paralleled by a rise in AIDS-related deaths, with around 1.5 percent of the adult population succumbing to AIDS in the 25th year of the epidemic. Thus, in a hypothetical population of 10 million adults, 150,000 would be expected to die of AIDS in year 25 of the epidemic alone.

In order to estimate the impact of the disease on turn-of-the-century annual population growth rates, Bongaarts made a series of assumptions about conditions in a hypothetical Central African population at the start of the epidemic: Its initial age structure is stable; life expectancy at birth is 44 for men and 47 for women; and women average 6.5 lifetime births. Furthermore, in the absence of the AIDS epidemic, life expectancy increases 7.5 years and the total fertility rate declines by 0.5 births per woman over the 25-year period. Using these conditions as a base, the model estimates the effects of several levels of HIV prevalence on annual rates of population growth and other demographic variables.

In the absence of AIDS, an annual growth rate of three percent in the mid-1970s was expected to increase to 3.2 percent by the century's end. If HIV prevalence were to reach 20 percent by the year 2000, an initial 1975 annual population growth rate of three percent would be decreased to 1.9 percent, and an initial annual growth rate of four percent would fall to 3.1 percent. (Bongaarts asserts that an HIV prevalence of 20–30 percent is probably a crude upper limit, based on current prevalence levels in the most seriously affected countries.) By the year 2000, the birthrate in Africa had been expected to decline from 49 to 45 births per 1,000 and the death rate, from 19 to 13 deaths per 1,000. While the AIDS epidemic would be expected to cause the birthrate to decline only slightly more than had been anticipated, the death rate would be expected to double to 26 per 1,000.

The age distribution of the population after 25 years of the epidemic would undergo only a relatively modest change, as long as HIV prevalence did not exceed 30 percent. Nevertheless, this estimate is considered applicable only to those countries most seriously affected; Bongaarts notes that "HIV prevalence in Africa as a whole could be less than five percent by the year 2000."

Thus, according to Bongaarts, if the epidemic does not exceed the range of this model's projections, population growth rates will probably remain high, given the current demographic conditions in Africa. However, he cautions that forecasting the spread of HIV and the demographic impact of AIDS "is a complex matter because a wide variety of behavioral, epidemiological, and demographic factors affect the course of the epidemic." Bongaarts concludes that even if the effects of AIDS on the growth rate and age structure are not major, the number of deaths from the disease will be large, and death rates could double in those countries most severely affected, "with disastrous effects on the health care system, the economy, and the fabric of society."

Reference

[1] J. Bongaarts, "Modeling the Spread of HIV and the Demographic Impact of AIDS in Africa," Working Paper No. 140, Center for Policy Studies, The Population Council, New York, 1988.

Cholesterol Levels May Be Altered by Hormones In Some Combined Pills

The progestogen component of combined oral contraceptives induces changes in serum lipid levels that may affect a woman's risk of developing certain diseases, according to a recent prospective study conducted by the World Health Organization. For example, pills containing the progestogen levonorgestrel raise the level of low-density lipoprotein cholesterol and decrease the level of high-density lipoprotein cholesterol; both types of changes have been associated with an increased risk of atherosclerosis. On the other hand, pills containing norethisterone acetate do not appear to cause such unfavorable changes in cholesterol levels, although they do raise levels of serum triglycerides.[1]

The study was carried out among female volunteers aged 18–35 at research centers in Bangkok, Thailand; Göteborg, Sweden; and Mexico City, Mexico. Women who had used hormonal steroids fewer than 70 days before admission to the study were excluded, as were those who had previously used hormonal contraceptives for more than three years. Participants were randomly assigned to take pill preparations containing 250 mcg of levonorgestrel and 50 mcg of ethinyl estradiol; 250 mcg of levonorgestrel and 30 mcg of ethinyl estradiol; 150 mcg of levonorgestrel and 30 mcg of ethinyl estradiol; or 1 mg of norethisterone acetate and 50 mcg of ethinyl estradiol. In addition, members of a control group of users of the TCu 220c IUD were recruited at each center.

Blood samples were taken from all participants at entry and again during the third and 12th months of the study to measure levels of high-density lipoprotein (HDL) cholesterol, low-density lipoprotein (LDL) cholesterol, total cholesterol and total triglycerides. The researchers compared the serum lipid levels measured among women taking each of the four pill preparations with those found among IUD users. Results were examined for all centers combined, as well as for each individual center.

The final sample, which included only the women who remained in the study for the full 48 weeks, consisted of 241 pill users and 87 IUD users, representing 59 percent and 72 percent, respectively, of the women originally recruited. Follow-up rates varied among the centers: Only 40 percent of the women recruited in Mexico completed the study, compared with 79 percent and 74 percent of those recruited in Göteborg and Bangkok, respectively.

At baseline, compared with controls, women assigned to take the pill were younger, had higher blood pressures and had lower levels of HDL cholesterol, total cholesterol and total triglycerides. Further, pill users were more likely than IUD users to have used a combined oral contraceptive as their last method before entering the study (30 vs. 16 percent) and were less likely to have previously used an IUD (nine percent vs. 51 percent, respectively). There were no significant differences in baseline characteristics among women using the four different pill preparations.

At 12 and 48 weeks, there were no significant differences in total cholesterol levels between any of the pill groups and the control group. Differences in total cholesterol levels among women taking the four different pill preparations reached borderline statistical significance only in Göteborg, where women who were taking the preparation with less estrogen (250 mcg of levonorgestrel and 30 mcg of ethinyl estradiol) had lower total cholesterol levels than those who were taking the formulation with the higher estrogen content (250 mcg of levonorgestrel and 50 mcg of ethinyl estradiol).

Women who took either of the pill preparations containing 250 mcg of levonorgestrel experienced a significant rise in their LDL cholesterol levels when compared with the control group: At 48 weeks, levels of LDL cholesterol among these women were about 12–15 percent higher than those measured among IUD users. LDL cholesterol levels among women who took the pill containing 150 mcg of levonorgestrel were also higher than those measured among controls, but the difference was statistically significant only in Göteborg. On the other hand, LDL cholesterol levels among women who took pills containing norethisterone acetate did not differ significantly from those among controls in any center.

Overall, as well as in each individual center, women who took oral contraceptives containing 250 mcg of levonorgestrel experienced a significant decrease in HDL cholesterol levels compared with controls: At 48 weeks, the average HDL cholesterol levels were nine percent lower among users of the 250 mcg of levonorgestrel and 50 mcg of ethinyl estradiol pill and 13 percent lower among users of the 250 mcg of levonorgestrel and 30 mcg of ethinyl estradiol preparation when compared with the average level among IUD users. By the end of the study, there were no significant differences in HDL cholesterol levels between the controls and users of pills containing 150 mcg of levonorgestrel or norethisterone acetate.

The ratios of HDL cholesterol to LDL cholesterol and of HDL cholesterol to total cholesterol were significantly lower among women who used either of the pills containing 250 mcg of levonorgestrel and were somewhat lower among those who used the pill containing 150 mcg of levonorgestrel than they were among the controls. Neither the former ratio nor the latter ratio was significantly lower among women who took the pill containing norethisterone acetate than among the controls.

However, triglyceride levels among women who took the pills containing norethisterone acetate were significantly higher than those among controls: At 48 weeks, triglyceride levels were 34 percent higher than among IUD users.

Analysis of the effects of each of the four pill preparations on serum lipid levels revealed significant differences between the two progestogens. When pills containing 250 mcg of levonorgestrel and those containing norethisterone acetate are each combined with the same dose of estrogen, those containing levonorgestrel induce a greater increase in levels of LDL cholesterol, a greater decrease in levels of HDL cholesterol and a greater decrease in the HDL/LDL and HDL/total cholesterol ratios. Further, the results show a dose-effect of levonorgestrel on serum lipids: Pills containing 250 mcg of levonorgestrel bring about a greater increase in levels of LDL cholesterol and a greater decrease in both ratios than do those containing 150 mcg of levonorgestrel.

The precise effect of decreases in levels of HDL cholesterol and in the HDL/LDL and HDL/total cholesterol ratios requires further research. There has been some speculation that these changes might produce an increased risk of myocardial infarction. However, one large study found that compared with never-users of the pill, women who take pills containing levonorgestrel are at a decreased risk of acute myocardial infarction.[2]

The WHO researchers conclude that before prescribing a combined oral contraceptive, clinicians should consider the clinical status of their patients—in particular, their cardiovascular condition and whether they have hypertriglyceridemia. Finally, since most of the effects on lipid levels were dose-related, clinicians should always suggest that their patients use the pill preparation containing the lowest effective dose of a particular hormone.

References

1. World Health Organization Task Force on Oral Contraceptives, "A Multicentre Comparative Study of Serum Lipids and Lipoproteins in Four Groups of Oral Combined Contraceptive Users and a Control Group of IUD Users," *Contraception*, **38**:605, 1988.

2. P. Croft and P. Hannaford, "Risk Factors for Acute Myocardial Infarction in Women," *British Medical Journal*, **298**:674, 1989.

Percentage of Men and Women Aged 55 and Older Is Growing Rapidly in Many Developing Countries

Although the low-fertility developed countries are known to have a large proportion of older citizens within their populations, the phenomenon is building unrecognized in developing countries as well, according to an analysis by the U.S. Bureau of the Census of the populations of 22 such countries.[1] In fact, 58 percent of people aged 55 and older currently live in developing countries, and this proportion will increase as time goes on. Almost one million persons in the Third World reach the age of 55 each month; the resulting annual growth rate among the older population is slightly more than three percent, a rate three times that of the developed countries.

The data for the report come from the International Data Base on Aging, computerized files covering a wide variety of variables that are maintained and updated by the Center for International Research within the Bureau of the Census. The data, while not necessarily representative of the developing world as a whole, pertain to 10 countries in Asia, five in Africa and seven in Latin America and the Caribbean (see Table 1); these countries were selected based on data availability, regional representation and importance to the Agency for International Development.

Among the developing regions, the Caribbean has the "oldest" population: Twelve percent of its citizens are 55 and older, compared with 10 percent in Asia, nine percent in Latin America and seven percent in Africa. The report notes that several factors tend to produce older populations in some countries within a region than in others, including a low-fertility rate and emigration of working-age individuals. As Table 1 shows, the proportions can vary greatly among countries within a region; in Asia, for example, the share of the population 55 and older ranges from seven percent in Bangladesh to 17 percent in Hong Kong. Overall, proportions among individual countries range from five percent in Kenya to 22 percent in Uruguay.

The table also indicates how these proportions will change during the next 30 years. By 2020, the proportion of the population 55 and older will double in a majority of Asian countries and will triple in Singapore. Although the proportion will

Table 1. Percentage of population aged 55 and older in 22 developing nations, 1988 and projection for 2020

Country	1988	2020
Asia		
Bangladesh	7.2	11.5
China	12.2	24.0
Hong Kong	17.0	34.5
India	8.6	14.8
Indonesia	7.8	16.4
Rep. of Korea	10.4	23.0
Philippines	7.5	11.6
Singapore	11.9	33.5
Thailand	9.0	18.4
Turkey	9.7	15.6
Africa		
Kenya	5.1	5.6
Malawi	6.3	5.8
Morocco	8.7	13.3
Tunisia	9.9	14.9
Zimbabwe	6.0	6.3
Latin America & the Caribbean		
Brazil	9.0	15.6
Costa Rica	8.7	19.1
Guatemala	7.2	11.8
Jamaica	12.0	16.6
Mexico	8.4	16.0
Peru	8.3	13.6
Uruguay	22.0	23.3

increase slightly in most African countries, it is projected to decline in Malawi. In Latin America and the Caribbean, the proportion will increase moderately in every country except Uruguay, where it will remain about the same.

The median age in almost all the countries in the study is currently younger than 25, and ranges from 19 in Kenya to 33 in Uruguay. However, these medians are expected to rise by 8–10 years over the next three decades; by the year 2020, countries such as Hong Kong and Singapore are expected to have median ages older than 45.

Although the majority of all persons 55 and older live in the developing world, 57 percent of those 75 and older are currently living in industrialized countries. However, this is the fastest growing group within the older population of the developing world, and by the turn of the century, the majority of people aged 75 and older (61 percent) will be living in developing nations, too.

Overall, average life expectancy at birth is 59 years in the developing world, but this average ranges from about 50 years in Bangladesh and Malawi to more than 75 years in Hong Kong, Costa Rica and Jamaica. Although the life-span advantage that women in the developed world have over men is not as great in the developing world, women outlive men in all the countries studied except Bangladesh, where men live 2.3 years longer than women. The report attributes this reversal of the typical worldwide pattern to the low social status accorded women and to the preference that men often receive in the use of scarce resources ranging from medical care to education.

Nonetheless, in most developing countries, as in the developed world, the proportion of women in the older population increases with age. In only four countries—Bangladesh, Zimbabwe, Morocco and Tunisia—do men outnumber women at ages 60 and older. Countries such as Hong Kong, Uruguay and the Republic of Korea already show the large female imbalances at older ages that are seen in industrialized nations, and this pattern is expected to be present by the year 2020 in most of the other countries as well.

The report points to growing concern in some countries, however, over whether traditional mechanisms of support will continue to absorb increasing numbers of widows. In societies in which social security and pension benefits rarely cover more than a small portion of the population, older women have traditionally relied upon extended families and similar informal social systems for support; elderly people rarely live alone, for example. Yet as families become smaller and young women increasingly enter the work force, the prospects that older persons will have children who can provide care and attention are diminishing. The rapid pace of urbanization exacerbates the estrangement of the elderly, as younger persons migrate to the cities, leaving rural populations disproportionately older.

While most women of the developing world have never been employed, the poor economic conditions in developing countries often mean that males who reach older ages cannot stop working. In few developed countries are more than 20 percent of men aged 65 and older in the work force; the proportions are much higher in developing countries, however, reaching 69 percent in both Mexico and Bangladesh.

Surveys from the early 1980s indicate that tremendous differences in educational levels exist between the younger and older generations in a number of countries, with older women being the least educated of all. For example, in China, 41 percent of men aged 25–44 have a secondary education, compared with eight percent of men 60 and older; comparable figures for women are 22 percent and one percent. With the exceptions of Hong Kong and Korea, educational levels are lower in the other developing countries than they are in China.

The report presents an analysis of the number of "dependent" persons (generally defined as those younger than 20 and older than 64) per 100 persons of working age (20–64 years). Although the dependent population in developing countries is now overwhelmingly concentrated in the younger age-group, that pattern will have changed considerably in three decades. In China, for example, 12 percent of the dependent population is currently 65 or older, but in 2020 that proportion will have grown to 31 percent. In Costa Rica, Thailand and Tunisia, eight percent of the dependent population is currently in the older age-group, but in 2020 the proportions will be 23 percent, 20 percent and 16 percent, respectively.

The aging of societies actually represents a success story, the report points out, because it means that infant mortality rates, the incidence of infectious diseases and fertility rates are being reduced and that education and health are improving. However, the study also notes that older populations require different social support services than young populations and that developing nations will have to recognize and plan for these changes if they are to age gracefully.

Reference

1. K. Kinsella, *Aging in the Third World*, U.S. Bureau of the Census, International Population Reports, Series P–95, No. 79, U.S. Government Printing Office, Washington, D.C., 1988.

Books in Review

A Feminist Critique Critiqued

Reproductive Rights and Wrongs: The Global Politics of Population Control and Contraceptive Choice

by Betsy Hartmann, Harper and Row, New York, 1987, $24.45 (cloth), $10.95 (paper), 368 pp.

Reviewed by Rebecca Cook and Ann Leonard

With *Reproductive Rights and Wrongs*, Betsy Hartmann has written an angry book, expressing her resentment at how, in her view, population control agencies have failed to respect the individual wishes and needs of women in developing countries. She selects her evidence to build a case that such agencies have served the developed world's agenda to preserve the status quo of international inequality by inducing women to accept inadequately tested and delivered contraceptive methods, thereby risking their personal health and individual dignity. Hartmann condemns the attempt to use population control as a "quick fix" for the perceived problems of rapid population increase in the developing world.

The author contends that pressure from international population control agencies has set the direction for family planning programs in the developing world, and she draws particularly on the experiences of Bangladesh, India and Indonesia. In Chapter 4, for example, she charges that Suharto, Indonesia's current ruler, came to embrace the philosophy of population control as a result of "the influence of Western-trained technocrats" [p. 74]. Elsewhere, in Chapter 11 Hartmann argues that the major international donors pressured Bangladesh to dramatically increase its focus on sterilization; she explains that "whereas before, village women were neglected by Bangladesh's family planning program, now they are targets of an aggressive sterilization drive that uses incentives and intimidation to produce results" [p. 211]. The true problems behind high fertility, according to the author, are female poverty and powerlessness, and these are at least ignored and often exacerbated by Western-funded population control efforts.

Drawing from her own observations, the author establishes her thesis that women in developing countries have sometimes been coerced into using particular methods of family planning. However, the author regrettably fails to acknowledge adequately the efforts of agencies such as the World Federation of Health Agencies for the Advancement of Voluntary Surgical Contraception to work with providers to identify the potential for abuse and ensure voluntary choice.*

Nonetheless, the quality of reproductive health care in many parts of the world is just as appalling as Hartmann vividly depicts. Furthermore, the risks and burdens of contraceptive use continue to fall disproportionately on women. For example, worldwide, women are generally sterilized at much higher rates than men, despite the well-known fact that vasectomy carries fewer health risks and is far less costly than female sterilization.

Hartmann decries the extent to which international agencies have influenced the direction of contraceptive research by focusing on hormonal or surgical methods that leave as little room as possible for user error and ignoring barrier methods and natural family planning, which rely—inconveniently—on the compliance of individual users. She argues that the contraceptive choices thereby presented to women often produce dangerous side effects and represent significant health risks, which may not always be discussed with the women expected to use the methods. "The misdirection of contraceptive technology," she asserts, "begins in the research phase and culminates in its use as a destructive and even deadly weapon in the war on population" [p. 161].

Hartmann's assertions on this point are based to a large extent on rather dated information; she makes little mention, for example, of more recently organized programs that favor barrier methods, natural family planning and an expanded role for males within family planning. The author also may place too much emphasis on the future development of injectable and subcutaneous hormonal contraceptives, which form only one part (and not necessarily even the major portion) of international agencies' plans.

The author is skeptical of new programmatic approaches to family planning that seek to integrate women's development projects, primary health care services and community participation, claiming that they deflect attention from women's true needs. In dismissing the concepts behind present policies as politically naive and based on a fear of women's desire to control more than their fertility, she offers a different prescription for addressing the realities of poverty and powerlessness—equal access to education, employment, capital and land.

The underlying criticism here is that family planning organizations have collaborated too closely with the prevailing powers in the developing world and have not spurred the kind of socioeconomic change that would undermine established power structures and replace them with others more favorable to poor women. For

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*Some of these activities are described in: World Federation of Health Agencies for the Advancement of Voluntary Surgical Contraception, *Voluntary Choice and Surgical Contraception*, New York, 1987.

example, in citing the example of Bangladesh, Hartmann asserts that major donors' aid has gone to supporting the small, wealthy minority and has "strengthened the hand of the Bangladesh military, . . . stifling attempts to restore democracy and initiate positive social change" [p. 211].

While Hartmann's anger is comprehensible, a question remains: How realistic is her prescription? International family planning agencies are not equipped to change the international economic order. What they can do, are doing and must do even better is promote increasingly higher standards of care and advance equal access to health services by removing such barriers as spousal authorization requirements, by promoting male involvement and by encouraging novel initiatives, such as the legal services program for women sponsored by Colombia's family planning organization, PROFAMILIA.[*] However, although agencies in the family planning field cannot change the large-scale economic order, as Hartmann advocates, they can influence both the domestic and international *family* order by demonstrating the positive influence of sexual equality on the operation of family planning programs.

One of the book's disappointments is the author's failure to relate her description and analysis to important events in the world over the past decade that presage greater empowerment for women. Since 1975, in the legal area alone, at least 86 countries have included amendments on sexual nondiscrimination in their constitutions, and 97 have ratified the Convention on the Elimination of All Forms of Discrimination Against Women.

Along with these developments, a strong international feminist movement is taking hold around the world, and while feminism shares a common goal—the fight against the oppression of women—it is not a monolithic movement. Betsy Hartmann neither recognizes the many different strands of feminist thought nor identifies the school of feminism to which she adheres, although her writing seems to identify her with that of socialist feminism. It would have been helpful if Hartmann had presented some of the differing points of view among feminists regarding health care. For example, the author does not discuss the ambivalence that some feminists feel regarding the fight for greater autonomy for women: Some question whether women subjected to longstanding cultural conditioning can become autonomous without first developing a new vision or sense of self, a step that for some may not be achievable in the foreseeable future.

Unfortunately, some feminists (usually from developed countries) are too impatient to wait for the cultural and social evolution that may be necessary for the exercise of true autonomy, and often show a kind of paternalism in claiming to know better than other women what those women want. Some feminists from the developed world have even played a role in destroying programs that feminists from the developing world approved as responsive to their health needs.

Pluralism is important in any social movement, and the multiplicity of feminist views on family planning provision and women's health must be taken seriously by family planning professionals around the world. It is not enough for the family planning movement to respond only to the arguments and complaints of conservative, often religiously motivated opposition around the world; it must also respond to feminist critics such as Betsy Hartmann. She, like most feminists, no matter how critical, is sympathetic to the professed goals of the family planning movement and presents that movement with the challenge of keeping faith with the values it claims to serve—the most important being the protection of women's reproductive autonomy.

[*] For information about this program, see: M. I. Plata, "Family Law and Family Planning in Colombia," *International Family Planning Perspectives*, **14**:109, 1988.

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Sterilization Counseling in Nigeria

YEAR 2000 (in 000s)
Pills
IUDs
Condoms
198,902.6
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203,254.0
128,428.3
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1,913,254.0
217,982.7
1,504.6
141,210.0

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Table of Contents

Page

Update 50

Articles

Changing Patterns of Fertility and the Supply of Contraceptive Commodities — Peter J. Donaldson and Shubha Ghosh 52

Dual Fertility Trends in Malaysia's Multiethnic Society — Richard Leete 58

The Effect of Counseling on Sterilization Acceptance by High-Parity Women In Nigeria — Alexander E. Omu, Sharon S. Weir, Barbara Janowitz, Deborah L. Covington, Peter R. Lamptey and Nadine N. Burton 66

Digest

In Mali, Childbearing Is Frequent and Modern Contraceptive Use Uncommon 72
Moderate Fertility Rates and Levels of Method Use Mark Ecuador DHS 73
After Four Years, One in 100 Female Sterilizations Fail, Brazil Study Finds 75
Fertility, Infant Mortality Are Very High in World's Least Developed Nations 76
Salvadoran Women Start Method Use Late, Rely Heavily on Sterilization 77

Books in Review

The State of a Continent: Demography in Africa — John C. Caldwell 79

UPDATE

Brazil's Singular AIDS Patterns

The AIDS epidemic in Brazil seems to be spreading in a unique way, representing a combination of the patterns seen in Africa and in the Western developed nations.[1] The prevalence of HIV-1 is highest among homosexual male prostitutes, wives of hemophiliacs and bisexual men. According to a recent serologic study, bisexual men may be acting as a bridge for the virus between the homosexual and heterosexual populations, a role filled by intravenous drug users in developed countries. The study also made the troubling finding that the rare HIV-2 strain has already been introduced into Brazil. The pattern of AIDS transmission identified in the study could lead to a rapid rise in infection rates among heterosexuals, especially women.

[1] E. Cortes et al., "HIV-1, HIV-2 and HTLV-I Infection in High-Risk Groups in Brazil," *New England Journal of Medicine*, **320**:953, 1989.

Roots of Kenya's High Fertility

In Kenya, which has one of the highest natural growth rates in the world (4.1 percent annually[1]), early age at first marriage is closely associated with high fertility. A multivariate analysis using data from the Kenya Fertility Survey of 1977–1978 shows that women who marry between the ages of 10 and 17 have at least 0.6 more children than those who wait until age 23 or older.[2] Oddly enough, the study also found contraceptive use to be positively associated with fertility, since most of the women who practice contraception do so to limit their already large families. Of all the variables examined—level of education, place of residence, marriage disruption, religion, contraceptive use and work status—none had as large an impact as age at first marriage, although educational attainment was a close second. According to the investigators, any attempt to raise the legal age at marriage would probably falter in African society, where the tradition of early marriage is deeply rooted. Instead, high fertility could be more readily brought down by providing opportunities for higher education and employment as alternatives to early marriage.

[1] Population Reference Bureau, *1989 World Population Data Sheet*, Washington, D.C., Apr. 1989.

[2] W. K. A. Agyei and J. Mbamanya, "Determinants of Cumulative Fertility in Kenya," *Journal of Biosocial Science*, **21**:135, 1989.

A World Growing Ever Larger, Faster

For anyone who wants up-to-date, comprehensive population data for every continent, region and country, the source has arrived—the *1989 World Population Data Sheet*.[1] But although the updated version is welcome, much of what it tells us is not: The world's annual growth rate edged up to 1.8 percent in 1989 from 1.7 percent in 1988, and the total population is estimated to have grown by 250 million since the world's population passed the five billion mark in 1987. The projected world population totals for the years 2000 and 2020 have also been adjusted upward, with China and India together now expected to contain almost three billion people by 2020. Those interested in receiving a copy of the data sheet should write to the Population Reference Bureau, P.O. Box 96152, Washington, D.C., 20090, USA.

[1] "Growth Rate Nudges Up Again," *Population Today*, May 1989, p. 4; and Population Reference Bureau, *1989 World Population Data Sheet*, Washington, D.C., Apr. 1989.

Development Key to Longer Life

In less developed countries, socioeconomic development appears to be more influential than public health measures in bringing about a decline in mortality. In the latest contribution to an ongoing debate, a recent study contrasting the influence of urbanization, industrialization and education with that of access to safe water and physicians and adequate nutrition indicates that although both sets of factors directly affect life expectancy, the impact of the socioeconomic variables is stronger.[1] The socioeconomic factors contributing most to the variations in life expectancy are literacy and the proportion of the population engaged in agriculture; of the public health variables, safe water has the greatest impact. Curiously, the study also shows that urbanization is negatively related to life expectancy. According to the researchers, developing countries may be repeating the history of the now developed nations, where, during their early period of urbanization, cities were overcrowded, unsanitary and unhealthy places to live.

[1] R. G. Rogers and S. Wofford, "Life Expectancy in Less Developed Countries: Socioeconomic Development or Public Health?" *Journal of Biosocial Science*, **21**:245, 1989.

Asking the Unaskable Around the World

The World Health Organization (WHO) plans to query Belgian housewives, Greek sailors and Ugandan truck drivers about their sex lives. People from at least 17 other countries will also be surveyed as part of WHO's efforts to gather enough information about human sexuality worldwide to solve some of the mysteries surrounding the variation in the spread of the AIDS virus.[1] Among the many developed and developing countries that have already agreed to participate are Belgium, Brazil, Costa Rica, Greece, the Ivory Coast, Kenya, the Netherlands, Nigeria, Senegal, Sri Lanka, Thailand and Uganda.

Fielding such a survey will not be easy—besides the usual problems associated with obtaining valid random samples, the subject matter makes it unlikely that some of the world's more conservative nations will want to join in. Language poses another obstacle, as the survey will have to be sensitively translated not only into the world's major languages but into a myriad of cultural and tribal dialects as well. But perhaps the greatest uncertainty lies with the truth of the responses—can people be trusted to answer honestly about their sexual behavior?

[1] "WHO Seeks Global Data on Sexual Practices," *Science*, **244**:418, 1989.

Korea Cracks Replacement Level

In 1988, the total fertility rate in Korea fell to a remarkable 1.6 births per woman, according to the most recent national survey from the Korea Institute for Population and Health.[1] Korea's total fertility rate now seems well below replacement level, a feat that has only been achieved in a few developed nations. The correspondingly low annual population growth rate dropped to one percent in 1988, from 2.9 percent in 1955–1960 and 1.6 percent in 1980. The survey also registered further increases in contraceptive use: Korea now has an overall contraceptive prevalence rate of 77 percent among all currently married, fecund women. Sterilization is the method of choice in Korea, with reliance on vasectomy having almost doubled in 10 years (from six percent in 1979 to 11 percent in 1988) and the prevalence of female sterilization having grown from 15 to 37 percent over the same period. According to the survey, reliance on the condom also doubled during the 10-year span (from five to 10 percent), while use of the IUD declined slightly (from 10 to seven percent) and pill use fell substantially (from seven to three percent).

[1] "Prevalence of Contraceptive Use and Fertility," *Korea Institute for Population and Health Bulletin*, No. 16, June 1989, p. 1.

UN Convention Causing Commotion

The proposed preamble to the United Nations Convention on the Rights of the Child is causing concern among many nations that would otherwise gladly ratify it. The draft version of the Convention contains a vaguely worded commitment to protect children "before as well as after birth."[1] A desire to have the Convention ready in time to coincide with the 30th anniversary of the original Declaration of the Rights of the Child (passed in November 1959) influenced the decision to retain the clause, which reportedly was promoted by right-to-life groups. Given that the Convention will be legally binding on all ratifying nations, some member countries fear that the clause could be used as a political weapon, and could also infringe on women's reproductive rights. At the very least, the wording will cause a great deal of confusion among the ratifying countries, especially since another UN Convention guarantees a woman's right to decide on the number and spacing of her children. In addition, the International Planned Parenthood Federation has pointed out that the clause has absolutely nothing to do with the children's rights that are set down in the Convention itself.

[1] "Draft of U.N. Child Rights' Convention Flawed," *JOICFP News*, No. 179, May 1989, p. 7.

Microspheres Pass Early Test

A new type of injectable contraceptive consisting of norethindrone microspheres is now one step closer to being ready for use. A Phase II multicenter study comparing 65 mg and 100 mg doses of a slow-release, injectable hormonal contraceptive active for 90 days has determined that 65 mg is the minimal effective dose, and that the 100 mg dose should be as reliable as the most effective injectable or oral contraceptive available.[1] The two doses tested were comparable in terms of the type of side effects the women experienced, their patterns of vaginal bleeding, and laboratory measures of hemoglobin levels, liver function and other metabolic indicators. Over the course of the six-month randomized trials, no pregnancies were reported in the 100 mg group, compared with one in the group using the 65 mg injection. Because of the limited experience with the latter dose, however, further testing will be required before the associated pregnancy rate of 2.6 per 100 woman-years can be accepted with confidence. The researchers expect that the norethindrone microspheres will be submitted to the U.S. Food and Drug Administration for approval once the ongoing animal studies and Phase III clinical trials are completed.

[1] G. S. Grubb et al., "A Comparative Evaluation of the Safety and Contraceptive Effectiveness of 65 mg and 100 mg of 90-day Norethindrone (NET) Injectable Microspheres: A Multicenter Study," *Fertility and Sterility*, **51**:803, 1989.

Breastfeeding Protects Infant Health

Breastfeeding provides a sizable degree of protection against infant diarrheal mortality, according to a recent case-control study conducted in two Brazilian cities.[1] Compared with breastfeeding, bottle-feeding multiplied the risk of death from diarrhea 14 times, while alternating breast milk with cow's milk or powdered milk increased the risk four times. Breastfeeding's protection appears strongest in the first months of life, when the immune system is least able to fight off diarrheal infections. Furthermore, there is a direct relationship between the number of times a mother breastfeeds and the probability that her infant will die as a result of diarrhea: For each additional episode of breastfeeding per day, the risk of mortality is reduced by 20 percent. Besides avoiding the need to use water that is often contaminated for reconstituting powdered milk, diluting cow's milk and washing utensils, breastfeeding appears to protect the gastrointestinal track from infection. The investigators estimate that among infants under two months old, diarrheal mortality in Brazil could be reduced by 63 percent if infants were given only breast milk.

[1] C. G. Victoria et al., "Infant Feeding and Deaths Due to Diarrhea," *American Journal of Epidemiology*, **129**:1032, 1989.

Dissolvable Implant Tested

Early tests of Capronor, a biodegradable contraceptive implant, indicate that the method works for about a year, delivering a steady dose of levonorgestrel from a small rod placed in the user's arm.[1] In a year-long study of 48 healthy, sexually active women of reproductive age, 16 were given a rod 2.5 cm long and 32 received a rod 4.0 cm long. Serum levels of progesterone obtained from 10 women in each group showed that the smaller rod consistently failed to prevent ovulation, while the larger rod suppressed ovulation nearly 75 percent of the time. Most women who ovulated had regular bleeding patterns, while a majority of the others bled irregularly. There was one pregnancy among women using the smaller rod and two among women using the larger rod. The researchers assume that the women who did ovulate were protected from pregnancy by hormone-induced changes in the endometrium and cervical mucus.

After eight months of use, levels of serum levonorgestrel were so low in the group with the 2.5 cm rods that insertion of a second rod was required. The researchers therefore concluded that the 4.0 cm size may be the minimal functional length. A second trial of Capronor is planned for early 1990. One of Capronor's potential advantages over NORPLANT® (now being used in many countries) is that it dissolves and thus does not require surgical removal.

[1] P. D. Darney et al., "Clinical Evaluation of the Capronor Contraceptive Implant: Preliminary Report," *American Journal of Obstetrics and Gynecology*, **160**:1292, 1989.

Changing Patterns of Fertility and The Supply of Contraceptive Commodities

The largest increases in contraceptive prevalence are projected to occur in Africa, where pill needs in the year 2000 will increase fourfold over the 1985 level and where the need for condoms will increase over five and a half times.

By Peter J. Donaldson and Shubha Ghosh

Summary

Growth in contraceptive use and in the number of couples of reproductive age will greatly increase the demand for contraceptive supplies in the developing world. The largest increases in contraceptive prevalence are projected to occur in Africa, where pill supplies will have to increase from 47 million cycles in 1985 to 199 million cycles in the year 2000 if that continent maintains current patterns of method preference and achieves the medium variant total fertility rates projected by the United Nations. In Asia, IUD use will grow from 286,000 units to almost 1.4 million units during that period, and condom use will increase from 715 million to almost two billion units. The need for contraceptive commodities will also expand in Latin American, but not by as much as in other regions.

Results of a projection indicate that the U.S. Agency for International Development (AID) will have to increase its pill supplies to Africa by over 300 percent to supply the same proportion of demand in 2000 that it did in 1985. It would have to expand condom supplies to Africa by more than 200 percent, to Asia by some 170 percent and to Latin American by almost 100 percent. Because of an apparent oversupply of IUDs, less growth in demand for this device is anticipated. Among the implications of these findings are a need for realistic country-specific projections of the growth in contraceptive commodities, as well as a need for planning how AID, other donors and developing countries, themselves, will meet the expanded costs.

Introduction

Two widely observed trends will influence future demand for contraceptives in the developing world. First, desire to limit family size and to control birthspacing, already widespread in many developing countries, is likely to continue and even increase in many areas. Second, population growth will persist throughout the developing world between now and the end of the century.[1] This combination of increased interest in fertility control and overall growth in the number of reproductive-age couples means a substantial increase in the demand for contraceptive services of all sorts, but especially for pills, IUDs, condoms and sterilization equipment.

Table 1 presents data that illustrate the increases in population, the declines in fertility and the growth in contraceptive prevalence expected between 1985 and the year 2000 in the major regions of the developing world. During this time, the number of married women will grow by more than 50 percent in Africa, by almost 40 percent in Latin America, by about 25 percent in East Asia and by 32 percent in South Asia. The total fertility rate is projected to decline hardly at all in East Asia and slightly in Africa (13 percent), but the declines in total fertility will be large in Latin America and South Asia (23 percent and 32 percent, respectively).

The achievement of these fertility levels implies a significant growth in contraceptive prevalence rates and in the number of contraceptive users. The projections in Table 1 show that the contraceptive prevalence rate will almost double in Africa and increase by 64 percent in South Asia. The increase will be much smaller in Latin America (27 percent) and almost nil in East Asia. In Africa, the number of women practicing contraception will climb from 12 million in 1985 to 35 million in the year 2000, an increase of nearly 200 percent. In Latin America, the number of users will increase by 76 percent during that period, in East Asia by 31 percent and in South Asia by 118 percent.

Although there are a variety of reasons for expecting downward trends in fertility to continue, major increases in contraceptive use are almost always assumed to be a central element. Changes in the age at marriage, in the proportion married or in the utilization of abortion and breastfeeding will also help determine future trends

Table 1. Measures of reproductive trends, by region, 1985–2000

Measure and region	Year		
	1985	1990	2000
Married women 15–49 (in millions)			
Africa	96	111	148
Latin America	68	77	94
East Asia*	184	209	233
South Asia	265	293	351
Total fertility rate			
Africa	6.4	6.2	5.6
Latin America	3.9	3.6	3.0
East Asia*	2.0	2.0	1.9
South Asia	4.4	3.9	3.0
Contraceptive prevalence rate			
Africa	12	15	23
Latin America	49	54	62
East Asia*	74	77	77
South Asia	33	41	54
Women practicing contraception (in millions)			
Africa	12	16	35
Latin America	33	41	58
East Asia*	137	160	180
South Asia	87	120	190

*Excluding Japan.

Source: J. Bongaarts, "Implications of Fertility Trends for Contraceptive Practice," *Population and Development Review*, **10**:341, 1984, Tables 3 and 4; and J. Bongaarts, personal communication, 1988.

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in fertility, but most analysts cite greater use of modern contraceptives as the key factor in the future fertility of women in the developing world.[2]

Increases in the prevalence rate of modern contraceptive methods over the past two decades have already caused a substantial growth in the demand for contraceptive commodities in developing countries. The number of married women in the developing world who use contraceptives increased from a few million in 1960 to approximately 400 million in 1985.[3] Throughout this period of rapid growth in the prevalence of modern methods of fertility control, the products used by developing-country women were often provided by international organizations geared to development assistance.

The problem of providing adequate supplies to a given family planning program without needless waste is an important and under-studied issue. The expected increases in the need for contraceptive commodities, the inevitable growth among cohorts of married women of reproductive age and the reliance of family planning programs in so many developing countries on donor-supplied contraceptives requires that more attention be given to the collection and analysis of data on contraceptive supplies. Some work has started recently,[4] but much more needs to be done.

This article provides one forecast of the probable demand for contraceptive commodities in the developing world between 1985 and the year 2000, a reasonable time frame for examining the impact of changing demographic behavior and potential public policy responses to those changes. It also illustrates the effect that changing patterns of fertility will have on the demand for contraceptive commodities from the U.S. Agency for International Development (AID), the largest international donor of contraceptive commodities. Using information on shipments of such commodities by AID and data on current contraceptive prevalence from developing countries themselves, we offer an estimate of the number of women currently using U.S.-supplied contraceptives and project the changes that will be necessary if AID is to keep pace with the growth in contraceptive use in developing countries. Our purpose is not to argue for a particular forecast, but to call attention to the rapidly increasing need for contraceptive commodities in the developing world and to the importance of country-specific analyses of future demand and of ways to meet that demand.

Data and Methodology

To evaluate the way changing demographic behavior may affect the demand for contraceptives supplied by international donors, we projected the demand for contraceptives by country and contraceptive method using the target-setting model developed by John Bongaarts.[5] Beginning with 1985 data on the number of women of reproductive age, the proportion who were married, total fertility rates and contraceptive prevalence, we used the model to determine the changes in contraceptive prevalence that would be needed to meet specific projected total fertility rates. We used the medium variant total fertility rate for the year 2000 developed by the United Nations as the target fertility rate for each country and then calculated the number of acceptors and users of various contraceptive methods required to meet this target.[6]

In our calculations, we assumed that abortion was not practiced and used the procedures established by Bongaarts and John Stover[7] to estimate trends in sterility and the duration of postpartum infecundability. We also assumed that the net effects on fertility of changes in the proportion of married women in the population, in postpartum infecundability and in the use of abortion as a means of fertility control between 1985 and 2000 would be zero. It has been previously demonstrated that this assumption simplifies the analysis and does not introduce significant distortion.[8]

The calculations are also based on the assumption that the country-specific "mix" of contraceptive methods would remain the same in the year 2000 as it was in 1985—that is, that the same proportions of married women practicing fertility regulation would be using each specific method in both years. This assumption has the advantage of yielding more conservative projections of future contraceptive demand than the alternative premise—that there will be a shift to greater use of modern methods as fertility control values spread in a society and contraceptive prevalence increases. Changes in method mix, especially increases in the proportion using modern contraceptives (particularly sterilization), are evident in many countries and are likely to continue. However, barring significant changes in economic, technological and cultural factors, country-specific contraceptive use over the next 15 years is likely to reflect the patterns already established.

Although the analysis illustrates the issues faced by all donors and national family planning programs, we concentrate on the contraceptive commodities supplied by AID because of the size and influence of the agency's program. In FY 1987, for example, AID spent $35.6 million on contraceptive commodities. These are provided to developing countries in two ways. First, AID's Office of Population in Washington, D.C., annually purchases and distributes several million dollars worth of contraceptive supplies. In 1987, for example, the Office of Population spent $10.6 million on contraceptives, most of it through grants to U.S.-based family planning and population organizations that provide contraceptives overseas. Second, AID offices or missions in developing countries may request contraceptive shipments, which are then paid for from regional, as opposed to central office, funds. In FY 1987, AID missions purchased $25.0 million worth of commodities in this way.[9] (These figures refer to 1987 "obligations"; actual expenditures would be somewhat different.)

Data for this analysis were obtained primarily from contraceptive shipment schedules supplied by AID's Office of Population. The schedules provide data by contract year, method and country. Some AID-purchased commodities are not accounted for in these schedules. Consequently, we tried to collect additional data from major AID grantees but were only partially successful. The Pathfinder Fund and Family Planning International Assistance provided information, but other major grantees did not. In addition, some contraceptive commodities are supplied by AID-supported organizations other than those we contacted; however, these represent a very small share of the total amount provided by AID.

Various AID documents provide somewhat different figures on the amount of contraceptives provided to individual countries. In part, this is because it is extremely difficult to keep precise account of a contraceptive program involving millions of units purchased in different ways and shipped between the United States and over 50 developing countries, in operations involving numerous nongovernmental organizations, contraceptive manufacturers, shipping and storage firms and a host of family planning, regulatory, pharmaceutical and transport organizations. The schedule of shipments is regarded by AID staff as the most reliable source of information, mainly because it covers commodities actually transferred overseas.

Our analysis includes most of the countries to which AID provided pills, IUDs and condoms in 1985. We omitted some small Caribbean states (e.g., St. Kitts) and a few places for which the data seem particularly weak (e.g., Chile). Taken together, the excluded countries account for approximately two percent of the value of contraceptive commodities shipped in FY 1986.[10]

We began our analysis by trying to determine the proportion of all contraceptives used in a particular country in a given year that were supplied by AID. The World Fertility Survey and similar studies provide reasonable estimates of contraceptive prevalence by method for most of the countries. These figures are the basis for estimating the amount of contraceptive commodities used in particular countries. The annual shipments of contraceptives provide data on AID-supplied commodities. However, these shipments include supplies to be held in inventory and are based on very rough forecasts of future use. These forecasts are typically premised on the principle of "planning for success," which means that AID field staff, developing country program managers and others involved in the procurement process are encouraged to order ample supplies to cover rapid growth in contraceptive demand.[11] Our analysis assumed that commodities were intended for use in the same year they were shipped by AID. This is clearly not always the case, but other assumptions do not seem more appropriate given that it is impossible to calculate how much of the supplies shipped in a given year were used in that year. Moreover, since AID aims to provide a regular flow of commodities to countries, our assumption provides a reasonable basis for estimating future needs.

It is worth noting, however, that the data needed to construct even simple measures of past trends and future prospects in country-specific commodity supplies have not been easily available to researchers nor, we believe, to the staff of donor agencies themselves. For example, a recent paper by Duff Gillespie, director of the AID Office of Population, and colleagues relies on regional, not country-specific data, and, therefore, does not provide an ideal basis for programmatic decision-making.[12]

Results

Table 2 shows the estimated level of contraceptive use in units of pills, IUDs and condoms in 1985 and the levels projected for the year 2000, by region and country. The estimates for the year 2000 were obtained by applying the Bongaarts target-setting model to developing countries receiving commodities from AID in 1985 and summing the results by region. The table also shows the amount and type of contraceptive commodities supplied by AID in 1985.

The Bongaarts target-setting model provides data on the number of users of specified methods required to reach a targeted fertility level. We estimated the contraceptives these users would need by assuming that each pill user would require 13 cycles per year and each condom user would require 100 condoms per year. The annual number of IUD insertions depends on country-specific continuation rates, which we assumed to be 60 percent at the end of one year. There is doubtless a fair amount of country-specific variation in these rates, but data on contraceptive continuation for all the countries in this analysis are impossible to obtain.

Our results are also influenced by the model's assumptions. Bongaarts' own work assumes 144 condoms per couple-year of protection. We believe this estimate to be high. In Indonesia and Pakistan, and probably other places as well, 60–70 condoms may be a reasonable estimate of what is needed to protect a couple for one year.[13] If users needed 144 condoms per year, the apparent excess of condoms that AID supplied to Africa in 1985, as shown in Table 2, would be much lower. Similarly, if we reduced the one-year IUD continuation rate from the estimate of 60 percent to 50 percent, the excess supply would diminish.

Changing the assumptions about the amount of contraceptive commodities needed in 1985 also influences the projections for the year 2000. Increasing the estimate of condoms used in Asia in 1985 (to 144 per couple per year, for example, based on Bongaarts' assumption) would increase the estimate of the condoms needed in Asia in the year 2000 by over 100 percent. More IUDs, of course, would also be needed if we reduced the estimated continuation rate.

The largest increases in contraceptive prevalence are projected to occur in Africa where pill needs, for example, will increase fourfold—from 47 million cycles in 1985 to 199 million cycles in the year 2000—and where condom needs will increase over five and a half times the 1985 level. The growth in the population of married women of reproductive age and increases in contraceptive prevalence will combine to increase the need for contraceptive commodities elsewhere as well. In Asia, the demand for pills will go from 43 million cycles in 1985 to 128 million cycles by 2000; IUD use will rise from 286,000 units to almost 1.4 million units. In Latin America, the need for pills is projected to increase from 122 million cycles to 218 million cycles over the same period. The need for IUDs and condoms would also increase in Latin America, but not by as much as in other regions.

Country-specific data on contraceptive commodities supplied by AID in 1985 show wide fluctuations by method. These same fluctuations occur by year (not shown) and explain why some countries one would expect to see on a list of recipients of AID commodities are not always there. Indonesia, for example, is not on this list because it did not receive any commodities in 1985. Indonesia received 100,000 IUDs in 1986, but no other commodities were provided in 1984, 1985 or 1986. Mexico, on the other hand, received commodities in 1985, but received no commodities in 1984.

Whatever countries or years are selected for illustration, comparing the estimates of contraceptives used in 1985 with the figures for contraceptives supplied by AID in that year indicates a pattern of over-ordering. This is a result, in part, of AID's "planning for success" strategy and of the need to keep a supply of commodities in inventory. This latter factor may be particularly significant in countries without adequate logistics systems. Program managers, concerned about their ability to meet the needs of clients, may find that keeping a large supply of contraceptives in inventory is the easiest way to overcome the deficiencies in local systems for controlling, storing and transporting contraceptives.[14] The Bangladesh "condom gap"—the difference between the reported prevalence of condom use and the number of donor-supplied condoms sold or distributed—is one well-known example of the difficulties of reconciling data on contraceptive use with commodities supplied by donors.[15]

The problem of over-ordering may mean that AID meets a smaller share of world need than a direct comparison of contraceptives used with those supplied in a particular year might suggest. Such a comparison indicates that in 1985, AID supplied 52 million cycles of pills, enough to meet 46 percent of the need in Africa, 32 percent in Asia and 14 percent in Latin America. AID supplied 600 million condoms, representing 149 percent of the need in Africa, 67 percent of the need in Asia and 89 percent of the need in Latin America. AID also provided approximately 3.8 million IUDs, enough for 245 percent of the need in Africa, 586 percent of need in Asia and 419 percent of the need in Latin America.

Table 2. Estimates (in 000s) of contraceptives used and commodities supplied by AID in 1985 and of projected need in 2000, by country, according to type of contraceptive

Country	1985						2000		
	Estimated use			AID supplied			Projected need		
	Pills	IUDs	Condoms	Pills	IUDs	Condoms	Pills	IUDs	Condoms
Africa	**47,197.8**	**219.4**	**36,784.0**	**21,722.3**	**537.0**	**54,715.0**	**198,902.6**	**1,129.7**	**203,254.0**
Botswana	379.6	2.7	0.0	1,108.8	72.6	678.0	781.3	11.1	0.0
Burkina Faso	96.2	0.3	150.0	116.4	8.0	24.0	1,313.0	2.0	2,110.0
Cameroon	44.2	1.0	340.0	31.2	4.3	21.0	382.2	6.7	294.0
Egypt	16,517.8	91.7	934.0	792.0	16.6	18,288.0	52,562.9	453.7	29,730.0
Ethiopia	1,523.6	2.6	2,440.0	13.9	0.0	0.0	11,424.4	17.0	18,310.0
Gambia	10.4	0.0	20.0	121.2	8.0	102.0	132.6	0.2	210.0
Ghana	898.3	3.7	1,940.0	265.2	0.5	4,350.0	9,865.7	41.9	21,250.0
Kenya	1,495.0	26.4	930.0	76.8	2.8	370.0	5,707.0	151.1	3,560.0
Lesotho	36.4	0.1	20.0	9.6	0.0	0.0	159.9	0.5	110.0
Liberia	31.2	0.1	50.0	68.4	1.2	234.0	560.3	0.8	900.0
Malawi	96.2	0.3	150.0	73.2	0.0	60.0	1,639.3	2.5	2,630.0
Mali	150.8	0.4	240.0	85.2	0.0	270.0	2,086.5	3.1	3,350.0
Mauritius	533.0	0.5	1,070.0	25.2	2.0	0.0	799.5	1.7	1,600.0
Morocco	9,361.3	26.8	3,990.0	6,772.8	50.0	900.0	34,548.8	133.0	14,740.0
Nigeria	8,664.5	10.2	14,140.0	3,109.8	175.7	13,266.0	37,103.3	59.1	60,540.0
Senegal	50.7	0.8	100.0	362.4	1.1	660.0	267.8	4.7	510.0
Sudan	1,671.8	2.4	370.0	138.4	7.0	66.0	16,088.8	16.6	3,590.0
Togo	46.8	0.1	70.0	13.2	2.2	360.0	734.5	1.1	1,180.0
Tunisia	902.2	44.1	2,310.0	200.0	50.0	3,204.0	2,252.9	192.3	5,780.0
Uganda	217.1	0.7	350.0	510.0	2.4	798.0	4,027.4	6.1	6,460.0
Zaire	481.0	1.7	770.0	0.0	100.0	0.0	8,693.1	13.1	13,940.0
Zimbabwe	3,989.7	2.8	6,400.0	7,828.8	32.6	11,064.0	7,771.4	11.1	12,460.0
Asia	**43,069.0**	**286.0**	**715,250.0**	**13,662.0**	**1,676.9**	**480,604.8**	**128,428.3**	**1,363.6**	**1,913,254.0**
Bangladesh	8,183.5	24.6	29,820.0	2,437.2	617.8	234,486.0	37,447.8	138.1	136,450.0
India	0.0	40.0	610,000.0	0.0	800.1	0.0	0.0	150.0	1,450,000.0
Nepal	404.3	0.9	1,150.0	476.4	0.0	8,448.0	2,983.5	5.4	8,530.0
Pakistan	2,215.2	80.0	17,040.0	50.4	252.0	229,056.0	27,056.9	558.6	208,130.0
Philippines	4,330.3	45.4	25,850.0	6,400.8	7.0	4,000.8	11,398.4	199.6	68,040.0
Sri Lanka	994.5	16.2	10,110.0	3,912.0	0.0	3,312.0	1,660.1	55.5	16,860.0
Thailand	21,997.3	74.4	14,930.0	369.6	0.0	1,302.0	34,691.8	237.1	23,550.0
Malaysia	4,943.9	4.5	6,350.0	15.6	0.0	0.0	13,189.8	19.3	1,694.0
Latin America	**121,938.7**	**381.7**	**71,710.0**	**16,632.0**	**1,600.8**	**64,077.2**	**217,982.7**	**1,504.6**	**141,210.0**
Barbados	118.3	0.4	280.0	109.2	3.2	576.0	130.0	1.0	310.0
Bolivia	416.0	10.9	0.0	97.2	20.8	2,136.0	1,056.9	48.5	0.0
Brazil	83,895.5	48.8	33,700.0	81.6	200.0	342.0	133,320.3	162.1	53,550.0
Colombia	10,465.0	74.0	4,240.0	0.0	60.0	24.0	18,662.8	263.7	7,560.0
Costa Rica	950.3	5.6	4,690.0	1,124.4	7.2	1,092.0	1,487.2	18.8	7,340.0
Dom. Rep.	1,151.8	9.6	1,550.0	2,638.8	32.1	7,362.0	2,405.0	35.9	3,250.0
Ecuador	1,748.5	19.9	1,460.0	91.2	15.3	282.0	3,729.7	78.6	3,110.0
El Salvador	902.2	9.5	910.0	516.0	26.0	1,494.0	1,942.2	38.8	1,960.0
Guatemala	903.5	11.2	1,390.0	1,402.0	8.0	3,120.0	2,631.2	54.7	4,050.0
Haiti	234.0	0.6	2,440.0	568.8	0.0	21,498.0	1,084.2	4.2	11,350.0
Honduras	972.4	5.6	2,980.0	649.2	20.0	325.2	2,425.8	25.3	7,440.0
Jamaica	1,158.3	3.1	3,510.0	1,056.0	7.0	4,932.0	2,133.3	11.1	6,460.0
Peru	2,129.4	33.4	3,280.0	734.4	23.3	1,002.0	5,162.3	141.2	7,940.0
Panama	677.3	5.2	1,620.0	810.0	88.0	768.0	1,105.0	16.9	2,630.0
Mexico	16,216.2	143.9	9,660.0	6,752.4	1,090.0	19,124.0	40,706.9	603.8	24,260.0

The growth in AID-supplied commodities may not have to be as large as a simple extrapolation of these percentages into the future would indicate. Table 3 (page 56) shows the projected amount of contraceptives AID would have to ship in the year 2000 to meet the same share of the demand that it did in 1985, but never in excess of the projected need for contraceptives. Even so, 100 percent of the projected need probably overstates AID's proportionate contribution.

Expanded need for AID contraceptive commodities follows the growth in demand caused by increases in population size and in contraceptive prevalence. Major increases will occur in Africa, and important but less substantial growth will

Table 3. Projections (in 000s) of AID-supplied contraceptives in 2000 and percentage change compared with commodities supplied in 1985, by region, according to type of contraceptive

Region	AID-supplied			Percent change		
	Pills	IUDs	Condoms	Pills	IUDs	Condoms
Africa	91,495.3	1,129.7	203,254.0	321.2	110.4	271.5
Asia	40,711.8	1,363.6	1,285,706.6	198.0	−18.7	167.5
Latin America	29,645.6	1,504.6	126,100.5	78.2	−3.8	96.8

take place in Latin America and Asia. AID will have to increase its pill supplies over four times its 1985 level to continue to meet the projected needs in Africa at the same level in the year 2000. AID pill supplies to Asia will have to increase almost threefold and those to Latin America will have to nearly double to keep pace with the estimated demand. Because of the apparent oversupply of IUDs, the future demand for the devices in Asia and Latin America will be less than that supplied in 1985. Additional condoms will be needed for family planning, but the proportionate increases are not quite as large as those projected for the pill. AID would have to almost quadruple its condom supplies to developing countries in Africa, almost triple those to Asia and almost double those to Latin America to maintain current levels. If AID supplies condoms for programs to combat acquired immune deficiency syndrome in developing countries, the increase in supplies needed would be even more dramatic.

The budget increases required for donors such as AID to meet world contraceptive needs in the future as they have in the past will be significant. Not only is the amount of supplies needed increasing, but the costs of contraceptives themselves are also rising. For example, the price AID paid for pills in 1987 increased from 14 cents to 27 cents a cycle.[16] New methods such as NORPLANT® will add to the commodity costs that national family planning programs and donors must pay. The conclusion remains that substantial additional growth in supplies will be required even when over-ordering and a possible decline in the donor's share of world need are taken into account.

Changing the assumptions we used to project future demand for contraceptive commodities would not alter our conclusion significantly. As an illustration, we calculated the difference a substantial increase in the use of sterilization would have on commodity demand. For the eight Asian countries to which AID supplied commodities in 1985, we assumed sterilization acceptance would double or reach a maximum of 50 percent of all users by the year 2000. (This model may also be taken as an estimate of one probable consequence of the introduction of a new highly effective method.) These increases in highly effective contraceptive practice have only modest effects on the estimated need for commodities in Asia: The need for oral contraceptives would decline by 13 percent, the need for IUDs by only five percent and the need for condoms by eight percent. The experience of countries in other regions would differ, of course, but changes in method mix, including increases in modern methods and sterilization, will not solve the contraceptive supply problem. Moreover, any decline in demand for temporary methods resulting from increases in sterilization may be partially offset by the rising cost of contraceptive commodities. Sterilization also has costs that in many cases must be met, at least in part, by local governments or international donors.[17]

Discussion

Because contraceptive users have increased faster than AID's commodity budget, AID funds per contraceptive user have declined since the mid-1970s; unless there are massive increases in appropriations, this decline will continue as the number of users increases. Better planning would help somewhat to make up for decreased funding and clearly should be encouraged. Over-ordering represents a poor use of resources for methods such as condoms, which can deteriorate during storage.[18] More attention should be paid to logistics and the management of contraceptive delivery systems. This is particularly true if one wants to be able to make realistic country-specific projections of commodity needs and their budget implications.

A large increase in funding would still be needed if AID is to continue to supply contraceptives to family planning programs around the world at the same level for the next 15 years. It may be unreasonable to expect AID to do so. Although the American financial commitment is eroding, other countries are increasingly supporting family planning. Questions about how contraceptive commodities will be paid for and what specific arrangements will be made by the international community to cover the increasing demand and cost need to be discussed and addressed now.

The practice of relying on the provision of contraceptive commodities as a major strategy for the promotion of fertility control around the world may also need to be reassessed. However, there is little infrastructure in most developing countries for the manufacture of contraceptives and only a limited market available within most countries to encourage the development of such an infrastructure. It is difficult to conceive of an alternative before the end of the century to the current system, in which international providers have to supply the bulk of the contraceptive commodities needed in the developing world. But while international donors, especially AID, have concentrated on the provision of contraceptive supplies, they have necessarily had to ignore opportunities to provide other types of population-related assistance. One wonders, for example, what would have happened if the capacity to manufacture contraceptives locally had been emphasized instead of supplying foreign-made products.

To some extent, donor-supplied commodities have been indiscriminately distributed within developing countries and, therefore, have competed with potential private-sector ventures in this area. The strategy of providing commodities may have also taken attention away from policy research and development activities that may have done more to increase local and international contributions to family planning than did the provision of commodities.

This said, it is by no means obvious that an alternative strategy would have yielded better results. The infrastructure in the typical developing country was so limited at the time donor programs began that it was probably unrealistic to encourage local manufacture of contraceptives. An unskilled labor force, a dearth of managers, poorly functioning markets and transportation and storage difficulties combined to make local manufacture of contraceptives expensive, if not impossible. The production of oral contraceptives in particular requires high levels of quality control, which requires both large initial capital costs and substantial recurrent costs. Moreover, there are important economies of scale associated with the manufacture of contraceptives. For many developing countries, the demand is not sufficient to justify investments in local manufacture.

In many of the developing countries, the importation of commodities was an occasion for policy debate and discussion regarding contraceptive distribution programs, tariffs on contraceptives and other health-related products and a host of other family planning issues that would not have been decided if the shipment of contraceptives had not forced the issue. Thus, one can argue that the provision of contraceptives initially encouraged rather than discouraged discussion, formulation and adoption of policies favorable to family planning.

Since the policy of supplying contraceptive commodities to promote fertility control began in the late 1960s, there have been far-reaching changes in developing countries and in the family planning programs that donors aim to assist. The recurrent costs associated with the commodity program have increased, but the proportion of all contraceptive users in developing countries who rely on donor-supplied commodities has declined. Given this, as well as the increase in contraceptive prevalence rates and in the absolute number of people using family planning methods, developing countries themselves will have to play a larger role in helping couples obtain the necessary contraceptive supplies from sources other than international donors.

Some countries may experience significant increases in the proportion of the contraceptive market served by the private sector. Many developing countries are experiencing a growth in income that will enable a larger share of married couples to take advantage of the commercial sector. It is difficult, however, to estimate how much of an increase there will be in the provision of contraceptives by the private sector. Moreover, substantial increases in provision in one country may be offset by a growth in users of public family planning services in another country.

Research on the source of contraceptive supplies presents vexing measurement issues with respect to current levels, and it is even more difficult to develop well-articulated and defensible assumptions with which to project trends. Nevertheless, we need to do a better job of both understanding the characteristics of contraceptive demand and of matching supply to that demand. Moreover, we need country-specific analyses that take account of national demographic and economic circumstances. These will enable managers of development-assistance programs to more effectively target those countries and those users most in need. If donor nations continue to support the provision of contraceptives to family planning programs in developing countries, more sophisticated analysis of the changing method mix and of the impact of new methods, such as NORPLANT, will be needed. (Boonlert Leoprapai offers one such analysis.[19])

It is clear that there is no single simple solution to the problem of providing an adequate supply of contraceptive commodities. Some countries, such as Indonesia, are already manufacturing contraceptives locally and purchasing supplies on the world market. The results of this experience and its implications for other countries moving in this direction need to be examined. (Michael Free and colleagues provide a valuable analysis of some of the factors involved in local production of contraceptives.[20])

An unanticipated consequence of the provision of commodities by international donors—and of the developing countries' acceptance of this policy—may have been that it has lessened the ability of developing countries to meet their own needs. Both donors and the developing countries will have to carefully evaluate and probably significantly change this approach if projected Third World demand is to be met between now and the year 2000. Problems inherent in the current contraceptive commodity programs and policies are real, and they have not been adequately addressed.

References

1. United Nations (UN) Population Division, *World Population Trends and Policies: 1987 Monitoring Report*, UN, New York, preliminary unedited version, 1986.

2. ——, *Levels and Trends of Contraceptive Use as Assessed in 1988*, UN, New York, 1989.

3. ——, "World Contraceptive Use," chart, UN, New York, 1987.

4. D. J. Bogue et al., "A Projection of Family Planning Needs and Costs 1985–2000: Bolivia," Social Development Center, Chicago, 1986; ——, "A Projection of Family Planning Needs and Costs 1985–2000: Colombia," Social Development Center, Chicago, 1986; ——, "A Projection of Family Planning Needs and Costs 1985–2000: Peru," Social Development Center, Chicago, 1986; and D. G. Gillespie et al., "Financing the Delivery of Contraceptives: The Challenge of the Next Twenty Years," paper prepared for a conference on the Demographic and Programmatic Consequences of Contraceptive Innovations sponsored by the Committee on Population of the National Academy of Sciences, Washington, D.C., Oct. 6–7, 1988.

5. J. Bongaarts, "Contraceptive Use and Annual Acceptors Required for Fertility Transition: Results of a Projection Model," *Studies in Family Planning*, **17**:209, 1986; J. Bongaarts and J. Stover, "The Population Council Target-Setting Model: A User's Manual," Center for Policy Studies Working Paper, The Population Council, New York, 1986.

6. UN Population Division, *World Population Prospects: Estimates and Projections as Assessed in 1982*, UN, New York, 1985.

7. J. Bongaarts and J. Stover, 1986, op. cit. (see reference 5).

8. J. Bongaarts and S. Kirmeyer, "Estimating the Impact of Contraceptive Prevalence on Fertility: Aggregate and Age-Specific Versions of a Model," in A. I. Hermalin and B. Entwisle, eds., *The Role of Surveys in the Analysis of Family Planning Programs*, Ordina Press, Liege, 1982.

9. C. Hemmer, Agency for International Development (AID), personal communication, Dec. 22, 1987.

10. AID, "Worldwide Report on A.I.D. Centrally Funded Population Assistance Program, FY 1986," Washington, D.C., 1987.

11. M. Jaramillo, "Some Ideas for the Development of a Methodology to Validate Forecasting of Contraceptive Needs Through Contraceptive Procurement Tables," John Snow, Inc., Arlington, Va., unpublished paper.

12. D. G. Gillespie et al., 1988, op. cit. (see reference 4).

13. I. K. B.-Somark, "Indonesia Cost/CYP Report," Jakarta, 1987; and B. Janjuja, personal communication, Oct. 14, 1987.

14. J. Graves et al., "Logistics," in R. J. Lapham and G. B. Simmons, eds., *Organizing for Effective Family Planning Programs*, National Academy Press, Washington, D.C., 1987, pp. 325–339.

15. J. Laing et al., "The Case of the 'Missing' Condoms in Bangladesh," unpublished paper, 1988.

16. C. Hemmer, 1987, op. cit. (see reference 9).

17. D. G. Gillespie et al., 1988, op. cit. (see reference 4).

18. M. J. Free et al., "An Assessment of Burst Strength Distribution Data for Monitoring Quality of Condom Stocks in Developing Countries," *Contraception*, **33**:285, 1986.

19. B. Leoprapai, "Impact of the Introduction of NORPLANT Implants into the National Family Planning Program of Thailand," *Journal of Population and Social Studies*, **1**:1, 1988.

20. M. J. Free et al., "Local Production of Contraceptives in Developing Countries," *International Family Planning Perspectives*, **10**:2, 1984.

Resumen

El aumento del uso anticonceptivo y de la cantidad de parejas de edad reproductiva han de acrecentar grandemente la demanda de anticonceptivos en el mundo en desarrollo. Se proyecta que los mayores aumentos de la prevalencia de anticonceptivos se produzcan en el Africa, ya que para que el continente logre las tasas globales de fecundidad medias proyectadas por las Naciones Unidas, los suministros de la píldora tendrán que pasar de los 47 millones de ciclos de 1985 a 199 millones para el año 2000. En el Asia, el uso del DIU ascenderá durante ese lapso, de 286.000 unidades a casi

(Continued on page 80)

Dual Fertility Trends in Malaysia's Multiethnic Society

> **"The striking feature is that while the proportions of Chinese and Indian women who use effective contraceptive methods have increased a great deal over time, the proportion of Malays who do so has dropped."**

By Richard Leete

Summary

Between 1957 and 1977, the total fertility rate (TFR) in Peninsular Malaysia fell from 6.2 births per woman to 4.0, with all of the principal ethnic groups (Chinese, Indians and Malays) registering fertility declines. However, in 1988, the TFR among the Chinese and Indians was 2.3 and 2.8 births per woman, respectively, but the rate among the Malays was 4.5 births per woman. The leveling of Malay fertility in the past 10 years is mainly due to a rise in fundamentalist Islamic principles, coupled with pronatalist governmental policies.

Data from the 1984–1985 Malaysian Population and Family Survey indicate that currently married Chinese and Indian women are considerably more likely than Malay women to practice contraception (64 percent and 66 percent vs. 41 percent, respectively). Furthermore, between 1974 and 1985, use of effective contraceptive methods increased among Chinese and Indian women, but declined among Malays; by 1985, a higher proportion of Malay women were using traditional folk methods of contraception than were using the pill, which had previously been the most popular method.

Introduction

During the more than thirty years since 1957, every socioeconomic measure of the welfare and well-being of Malaysia's multiethnic population has changed fundamentally.* There have been spectacular gains in per capita income, reductions in poverty and shifts in employment patterns toward the urban industrial and service sectors.[1] In 1957, just one-quarter of Malaysia's 7.4 million population lived in urban areas, whereas currently, some 40 percent of its 17 million people do so.

Educational opportunities have expanded at all levels. In 1957, four out of every 10 persons aged 10 and over were literate; the corresponding figure 30 years later is eight out of 10, with the illiterate being almost exclusively among the older generations. There have also been marked improvements in public utilities, and most houses now have electricity and piped water.

Socioeconomic changes have been accompanied by sharp reductions in mortality. In 1960, life expectancy at birth was below 60 years, and by 1987, it had risen to around 71 years. Over the same period, the infant mortality rate more than halved, and is currently around 20 deaths per 1,000 live births.

According to demographic transition theory, the socioeconomic and demographic changes that have occurred in Malaysia during the past 30 years should have led to a substantial and sustained fertility decline. Indeed, similar changes elsewhere in East and Southeast Asia—notably, in South Korea, Hong Kong, Thailand, Taiwan and Singapore—have been accompanied by sustained fertility reductions to around replacement level and below.[2] In particular, the transition from high to low fertility in the neighboring multiethnic city-state of Singapore, which attained below replacement fertility in 1975, appeared to foreshadow a similar movement in Malaysia.

Civil registration data showing trends in fertility supported the view, current in the late 1970s and early 1980s, that Malaysian fertility was inexorably heading towards replacement level before the end of the 20th century. As Table 1 shows, in the 20 years from 1957 to 1977, the total fertility rate (TFR) in the Peninsula fell from 6.2 children per woman to 4.0, a reduction of about 35 percent. The rapid socioeconomic changes that were still occurring made continued fertility reductions seem inevitable.

Table 1. Total fertility rates for selected years between 1957 and 1987, by ethnic group, Peninsular Malaysia

Year	All*	Chinese	Indians	Malays
1957	6.2	7.2	6.9	6.1
1960	6.0	6.3	6.7	5.9
1962	6.0	6.2	7.2	5.8
1965	5.5	5.6	6.7	5.5
1967	5.4	5.2	6.2	5.4
1970	4.9	4.6	4.8	5.1
1972	4.7	4.3	4.4	5.0
1975	4.2	3.6	3.9	4.7
1977	4.0	3.4	3.6	4.5
1980	3.9	3.1	3.4	4.5
1982	3.8	2.9	3.2	4.6
1985	3.9	2.7	2.9	4.8
1987	3.5	2.3	2.8	4.5

*Includes births of a very small proportion of women of other ethnic origins.

Note: The figures for 1957 and the early 1960s are subject to a small amount of underregistration, which differs among ethnic groups.

Source: Computed from civil registration data.

The table further shows that from 1957 to 1977, fertility levels declined among each of the three main ethnic groups within Peninsular Malaysia. However, the decline was more spectacular among the Chinese and Indians than among the majority Malays,[3] with their respective fertility reductions over the 20 years amounting to 3.8, 3.3 and 1.6 children per woman. Consequently, whereas Malay fertility had been significantly below that of the Chinese and Indians in 1957 (probably because of the former's longer birth intervals associated with prolonged breastfeeding), by 1977 the pattern had changed so that the TFR among Malay women was one child above

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*Peninsular Malaysia became independent in 1957 and the federation of Malaysia, including Sabah and Sarawak on the island of Borneo, was formed in 1963.

that of the other two communities (4.5 vs. 3.4 and 3.6 children per woman, respectively).[4]

Unlike the situation in Peninsular Malaysia, civil registration of births is only partially complete in the lesser developed regions of Sabah and Sarawak in East Malaysia, which constitute almost 20 percent of Malaysia's population. In these two regions, estimates of fertility levels produced by a range of indirect procedures indicate that fertility declines also occurred among the various ethnic communities, but that the levels were above those of the corresponding communities in the Peninsula.[5]

Since 1977, fertility trends among the Chinese and the Indians have continued sharply downwards, following paths similar to those of the Chinese and the Indians in Singapore and elsewhere in East and Southeast Asia. However, during the same period, fertility among the Malays and other Bumiputera (indigenous groups) has tended to stabilize and even to rise slightly. The net effect has been a significantly smaller reduction in the fertility level of the country as a whole when compared with the previous 10 years. In 1988, the Chinese and Indian communities together accounted for 38 percent of Malaysia's population, compared with 45 percent in 1957; consequently, their influence on overall fertility trends has diminished with time.

This article examines the factors associated with the changes in Chinese and Indian fertility and with the relative stability of Malay fertility over the past decade. The focus is on Peninsular Malaysia because of the greater availability of data for that area of the country. In 1988, the Malays accounted for 57 percent of the Peninsula's population, the Chinese, for 32 percent and the Indians, for 10 percent. The corresponding figures in 1957 had been 50 percent, 37 percent and 10 percent, respectively. The Malays are more concentrated in rural areas and the Chinese in urban areas. As expected, these urban-rural differences are reflected in differing patterns of employment.[6] There is only very limited intermarriage between persons of different ethnic origins in Peninsular Malaysia.[7]

Nuptiality and Childbearing Trends

In countries where first births mainly come after and not before marriage, modern fertility transitions generally follow or are accompanied by changes in nuptiality. Increasing postponement of the age at first marriage generally results from the spread and upgrading of education, coupled with increased employment opportunities in industrial and service occupations after schooling. In Malaysia, marriage marks the beginning of the family formation process, so that falls in the proportion of people married by different ages can have an important influence on family size.

Table 2. Number of women per 1,000 ever-married at selected ages, median age at marriage and average age at marriage of the youngest 25 percent, all by ethnic group and birth cohort, 1984–1985 MPFS

Ethnic group and birth cohort	Age 18	20	22	24	26	30	35	40	Median age	Lowest quartile age
Chinese										
1935–1939	162	293	440	566	718	880	922	933	22.2	19.0
1940–1944	161	276	479	617	755	875	921	935	21.8	19.1
1945–1949	118	242	382	539	701	838	892	na	23.1	19.6
1950–1954	84	205	355	554	695	810	na	na	23.0	20.1
1955–1959	57	172	331	511	631	na	na	na	23.4	20.6
1960–1964	76	184	na	na	na	na	na	na	na	20.8
Indians*										
1935–1939	500	648	741	815	852	907	926	926	17.5	15.2
1940–1944	372	582	768	814	861	907	930	954	18.6	16.3
1945–1949	352	507	676	761	845	930	944	na	19.4	16.4
1950–1954	207	378	505	604	703	820	na	na	21.5	17.9
1955–1959	132	306	512	653	694	na	na	na	21.5	18.9
1960–1964	161	232	na	na	na	na	na	na	na	19.7
Malays										
1935–1939	563	754	836	867	890	910	926	926	17.5	14.7
1940–1944	536	717	842	898	926	950	964	971	17.2	15.2
1945–1949	343	508	644	743	839	891	916	na	19.3	16.3
1950–1954	287	449	593	702	800	878	na	na	20.4	17.1
1955–1959	203	345	523	680	768	na	na	na	21.2	18.2
1960–1964	143	292	na	na	na	na	na	na	na	19.0

*The figures for the cohorts of Indian women here and in Table 3 are based on small sample sizes, so they are subject to relatively large margins of error. Note: na=not applicable.

Trends in the first-marriage behavior of successive birth cohorts come from data from the 1984–1985 Malaysian Population and Family Survey (MPFS), which canvassed a representative sample of 4,000 ever-married women aged 15–49 in Peninsular Malaysia.[8] The MPFS was carried out 10 years after the Malaysian Fertility and Family Survey (MFFS), which was part of the World Fertility Survey.[9] Although the core questionnaire in the MPFS was restricted to ever-married women, some information, including date of birth and ethnicity, was also collected about single women in sample households where an eligible respondent was available. By combining the data on single women with those on ever-married women, we can examine marriage profiles of birth cohorts.

Table 2 illustrates the magnitude of the shift in marriage behavior among quinquennial birth cohorts of women in Peninsular Malaysia, and confirms the secular trends found in the 1980 population census of Malaysia.[10] In general, the younger the birth cohort, the lower the proportion ever-married at any given age, irrespective of ethnic group. Almost 20 percent of the Chinese and Indian women in the 1950–1954 birth cohort—a cohort that was moving through the peak childbearing ages from the mid-1970s to the mid-1980s—were still unmarried by age 30. Such large proportions of Chinese and Indian women remaining unmarried at the younger ages is consistent with a reduction in the proportions who will ultimately marry, and also with a substantial depressing effect on the fertility of those cohorts.

Reductions in the proportions of Malay women ever-married at ages 30 and above are less marked than declines among the Chinese and Indians: In the 1950–1954 cohort, only 12 percent of Malay women were not married by age 30. This decline in marriage rates among younger women has been due to later marriage rather than to any significant flight from marriage. Nevertheless, although later marriage among Malays is consistent with reductions in fertility at the younger childbearing ages and with a concomitant later mean age at first birth,[11] there remains considerable latitude for further increases in the age at first marriage among this group of women.

Trends in the median ages at first marriage of the different cohorts and in the

Table 3. Mean number of children ever-born, by duration of marriage, and percentage of childless women after five years of marriage, all according to ethnic group and marriage cohort, Peninsular Malaysia, 1984–1985 MPFS

Ethnic group and marriage cohort	Duration of marriage (years)								% childless*
	2	5	8	10	12	15	20	25	
Chinese									
1950–1954	0.8	2.5	3.9	4.6	5.3	6.2	6.8	7.0	3
1955–1959	0.9	2.5	3.8	4.4	4.9	5.5	6.0	6.3	2
1960–1964	0.9	2.4	3.4	4.0	4.3	4.5	4.8	na	2
1965–1969	1.0	2.3	3.3	3.7	3.9	4.2	na	na	1
1970–1974	1.0	2.1	2.8	3.2	na	na	na	na	2
1975–1979	1.0	2.0	na	na	na	na	na	na	2
Indians									
1950–1954	0.6	2.0	3.3	4.1	4.8	5.7	6.3	6.3	11
1955–1959	1.0	2.3	3.4	4.0	4.5	5.0	5.3	5.3	3
1960–1964	0.8	2.3	3.3	3.9	4.5	5.0	5.2	na	8
1965–1969	0.9	2.2	3.1	3.6	4.0	4.4	na	na	4
1970–1974	0.8	1.9	2.9	3.3	na	na	na	na	6
1975–1979	0.9	2.1	na	na	na	na	na	na	2
Malays									
1950–1954	0.5	1.9	3.2	4.0	4.7	5.7	7.3	8.3	4
1955–1959	0.7	2.0	3.1	3.8	4.5	5.3	6.3	6.8	4
1960–1964	0.8	2.1	3.1	3.6	4.1	4.8	5.7	na	1
1965–1969	0.8	1.9	2.8	3.3	3.8	4.5	na	na	2
1970–1974	0.8	1.9	2.8	3.3	na	na	na	na	3
1975–1979	0.9	2.0	na	na	na	na	na	na	1

*Childless after five years of marriage. Note: na=not applicable.

lower age quartile, shown in the last two columns of the table, highlight the trend toward ever later marriage.

Table 3 shows that ever later age at first marriage has not been accompanied by a postponement of childbearing within the first couple of years of marriage. If anything, there has been a slight increase over time in achieved fertility within the first two years of marriage. Because they are postponing marriage, women in the more recent marriage cohorts are older at the time of their first birth than are those in the earlier cohorts; however, they are also having their first birth at shorter intervals after marriage.[12]

However, the more recent marriage cohorts of Chinese women, and to a lesser extent those of Indian women, are increasingly resorting to family planning after the early years of marriage. For example, Chinese women who first married in the 1970s had about half a child less within the first five years of marriage than did those who first married in the 1950s and 1960s (2.0 children vs. 2.5 children, respectively); reductions in the number of births per woman have been much more dramatic at the longer durations of marriage. Conversely, among Malay women, the intensity of childbearing within the first 10 years of marriage has not changed markedly with time; however, at the longer durations of marriage—15 or more years—there is clear evidence of a big drop in Malay fertility.

While the 1984–1985 MPFS data throw light on secular fertility trends of marriage cohorts in Peninsular Malaysia, they are inadequate for explaining period fertility trends since the 1970s. That is, given the sample size and other technical biases, it is not feasible to rearrange the retrospective data from the survey in order to obtain single calendar-year measures by ethnic group. However, recent trends can be strikingly captured using civil registration data. A convenient way of assessing trends is to disaggregate TFRs according to birth order. These rates are computed in exactly the same manner as are period TFRS, except that the numerators of the age-specific rates are restricted to births of a given order.

Among Chinese and Indian women, fertility rates have declined dramatically for four or more lifetime births, as Table 4 shows, and fertility rates have also declined for three lifetime births. For example, whereas in 1970, births of the fourth order and above made up more than half of the Chinese TFR, by 1987, such births accounted for less than one-quarter of it. Large families are a phenomenon of the past for these communities, and progression toward a two-child family norm is increasingly evident.

In the future, Chinese and Indian couples are likely to have even smaller families than those suggested by their 1987 TFRs, which were 2.3 and 2.8 children per woman, respectively. Evidence for this comes from a regression analysis of trends in Chinese and Indian TFRs between 1970 and 1985 computed from civil registration data in the different states and regions of Malaysia* and in other selected countries in East and Southeast Asia.[13] The results indicate that despite significant differences in intercept values, which reflect wide geographic variations in fertility levels, there are striking similarities in slope values, which reflect similar paths of decline. The analysis suggests that further declines in Chinese fertility are likely because of the probability of further reductions in the lag fertility states—such as Sabah, Sarawak and Johore—as they continue the catching-up process, and in the lead fertility areas—such as the West coast states of Penang and Selangor—as they follow the fertility trends of other overseas Chinese populations. Indian fertility in the higher fertility states could also follow a similar trend to that of the Indians in the lead state of Penang and in Singapore.

On the other hand, among the Malays, third- and fourth-order fertility rates have hardly changed since 1970, and reductions in fifth-order rates have been relatively modest. The only significant downward trend is in births of the sixth order and above, which generally occur to women of older childbearing ages and of longer durations of marriage.

Period fertility indicators, such as those shown in Tables 1 and 4, can sometimes give an exaggerated picture of underlying trends. For example, during the transition to older ages at marriage, lower fertility rates at a given birth order among younger women may be made up in subsequent years as the women age. This situation appears to have occurred among the Malays. Period fertility in the first half of the 1970s fell below that of the late 1960s mainly due to declines in fertility rates among women under the age of 25, coupled with declines in births at orders six and above; the former represented postponement of births due to later marriage, and the latter represented the trend toward a family-size norm of between four and five children.[14] A part of the boost in Malay period fertility in the late 1970s and early 1980s resulted from the making-up of postponed births.

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*Peninsular Malaysia is composed of 11 states and the Federal Territory of Kuala Lumpur. The regions of Sabah, including the Federal Territory of Labuan, and Sarawak are also sometimes referred to as states.

An analysis of Malay fertility trends computed from civil registration data in the different states of Malaysia showed that when fertility levels began to stabilize in the mid-1970s and subsequently increased slightly, the response was fairly uniform in the different states, despite significant differences in prevailing fertility levels and in socioeconomic development.[15] However, there are distinctive regional fertility patterns, and the differences are particularly evident between the lesser developed East coast states and the more prosperous West coast states.

Malay fertility has tended to be lower in the more multiethnic and more urbanized West coast states of Penang and Selangor than it has in the rural and poorer East coast states of Kelantan and Trengganu. However, fertility in Penang and Selangor rose in the early 1980s, so that in 1987, it was at the same level or higher than it had been 10 years earlier. The short-term impact of modernization and development on Malay fertility in these states during this period appears to have been negligible. The Malays in Penang may not be a reliable lead group for assessing what might follow elsewhere in the Peninsula, because Penang is the only state where the Malays do not constitute the majority of the population. Interestingly, in the southern state of Johore, which borders Singapore and has benefited from considerable industrialization, the TFR has fallen below that in Selangor (4.3 vs. 4.6 children per woman, respectively).

Despite considerable advances in socioeconomic development and improvements in individual welfare in the East coast states of Kelantan and Trengganu, fertility levels remained relatively stable there throughout 1970–1987. Malay women in these two states have 5–6 children, on average. Further, there is relatively little variation in fertility levels in the 15 different administrative districts in these two states.[16]

Regional differences in Malay fertility levels are partly, but not entirely, explained by differences in marriage patterns and in the use of family planning. Women living in the east coast states tend to marry for the first time at a considerably younger age than do their counterparts elsewhere in the Peninsula, and they are also much less likely to use birth control, particularly the effective methods.[17]

Table 4. Total fertility rate and birth-order fertility rate, by ethnic group and year, Peninsular Malaysia

Ethnic group and year	TFR	Birth order					
		1st	2nd	3rd	4th	5th	≥6th
Chinese							
1970	4.62	0.84	0.75	0.69	0.57	0.45	1.33
1974	3.90	0.95	0.73	0.61	0.47	0.34	0.81
1978	3.37	0.91	0.80	0.60	0.41	0.25	0.40
1982	2.93	0.84	0.77	0.59	0.35	0.18	0.20
1987	2.25	0.63	0.61	0.47	0.29	0.13	0.11
Indians							
1970	4.80	0.74	0.69	0.64	0.57	0.50	1.65
1974	4.16	0.81	0.73	0.64	0.50	0.43	1.05
1978	3.48	0.85	0.74	0.62	0.44	0.30	0.54
1982	3.18	0.80	0.73	0.60	0.41	0.26	0.37
1987	2.77	0.76	0.63	0.51	0.36	0.23	0.28
Malays							
1970	5.09	0.80	0.78	0.73	0.66	0.60	1.53
1974	4.73	0.87	0.77	0.67	0.58	0.51	1.34
1978	4.28	0.84	0.78	0.66	0.52	0.41	1.06
1982	4.59	0.87	0.82	0.75	0.61	0.47	1.07
1987	4.51	0.84	0.77	0.73	0.65	0.49	1.03

Source: Computed from civil registration data.

Family Planning

The Malaysian National Family Planning Programme was launched in the mid-1960s following concern over high rates of population growth against a background of falling per capita income and considerable unemployment. The First Malaysia Plan (1966–1970), called for less rapid population growth[18] and established the National Family Planning Board (NFPB) to carry out government population policy.

The family planning program began in the large metropolitan centers in 1967–1968 and was gradually extended to smaller towns and adjoining rural health centers. In the early 1970s, the program was integrated with maternal and child health services in the rural areas and was then expanded to cover remote rural areas through the use of mobile units and traditional birth attendants. Currently, contraceptive service delivery in urban areas is provided by NFPB clinics, the Family Planning Associations and private practitioners. Services in the rural areas are mainly covered by the Ministry of Health.

Table 5 shows trends in knowledge, ever-use and current use of contraceptives among currently married women in Peninsular Malaysia according to data from the 1974 MFFS and the 1984–1985 MPFS. Overall, about one-half of all currently married women were using contraceptives in 1985, compared with just one-third of such women 10 years earlier. Both surveys

Table 5. Percentage of currently married women who had ever heard of, had ever used or were currently using specific contraceptive methods, 1974 MFFS and 1984–1985 MPFS

Method	Knowledge		Ever-use		Current use	
	1974 (N=5,807)	1984–1985 (N=3,888)	1974 (N=5,807)	1984–1985 (N=3,888)	1974 (N=5,807)	1984–1985 (N=3,888)
Any*	**90**	**99**	**50**	**77**	**33**	**51**
Pill	55	97	34	45	19†	12
IUD	39	63	2	5	1	3
Condom	26	75	2	22	†	8
Sterilization	71	85	4	8	4	8
Rhythm	29	58	11	22	4	7
Withdrawal	23	47	8	17	2	4
Abstinence	26	37	5	6	2	2
Folk methods	15	54	6	15	2	8

*Includes a very small number who had ever heard of, had ever used or were currently using injectables.

†In 1974, current users of the pill and condom were grouped together.

reveal that the pill is the most commonly known and most widely used contraceptive method in the Peninsula. In 1985, about 12 percent of currently married women were using the pill, which is the main method of birth control promoted by the family planning program. However, the 1985 data also show that although knowledge of effective contraceptive methods (i.e., the pill, the IUD, condoms and sterilization) is widespread, only about 31 percent of currently married women use them, while 21 percent of such women rely on less effective and traditional methods.

Table 6. Percentage of currently married women practicing contraception, by method, according to ethnic group, 1974 MFFS and 1984–1985 MPFS

Method	Chinese		Indians		Malays	
	1974 (N=1,988)	1984–1985 (N=1,331)	1974 (N=543)	1984–1985 (N=390)	1974 (N=3,241)	1984–1985 (N=2,116)
All*	**48**	**64**	**40**	**66**	**22**	**41**
Pill	25†	13	14†	6	16†	11
Condom	†	17	†	7	†	2
Sterilization	6	13	13	22	1	2
Other female	2	5	1	4	0	2
Rhythm	7	11	5	5	1	5
Withdrawal	3	4	3	10	1	3
Abstinence	4	2	4	10	0	1
Folk methods	1	0	0	1	3	14

*Includes other methods not listed in the table. †In 1974, the pill and condom were grouped together.

Table 6 shows the level of current contraceptive use among currently married Malay, Chinese and Indian women according to patterns of practice over the 10 years between the two surveys. Overall, currently married Chinese and Indian women are considerably more likely than their Malay counterparts to practice contraception (64 percent and 66 percent vs. 41 percent, respectively). The most popular methods among the Chinese are the condom, the pill and sterilization, used respectively by 17 percent, 13 percent and 13 percent of currently married women. Further, a considerable proportion (11 percent) of Chinese couples use the rhythm method. Among the Indians, sterilization is the dominant method; more than one out of every five married Indian women have been sterilized. However, a substantial proportion of Indians use such ineffective methods as withdrawal and periodic abstinence.

By 1985, traditional folk methods, such as herbal-based *majun* and *jamu*,* had become more popular than oral contraceptives among the Malays. In fact, much of the increase in contraceptive use by the Malays (from 22 percent of currently married women in 1974 to 41 percent in 1985) was due to the increased use of traditional folk methods. On the other hand, sterilization has remained uncommon among the Malays.

Table 7 displays the pattern of contraceptive practice found in 1974 and in 1984–1985 among currently married Malay, Chinese and Indian women according to marriage cohort. It is particularly illuminating to compare use among women from marriage cohorts in 1974 with those in the 1984–1985 survey who married 10 years later, thereby taking duration of marriage into account. Whereas the proportion of women in all three ethnic groups who currently practice contraception increased over the period between the surveys, the gap between the groups is still marked. For example, among the 1955–1959 cohort in the earlier survey, 57 percent of Chinese women, 50 percent of Indian women and 26 percent of Malay women were practicing contraception; comparable figures from the later survey for women married in 1965–1969 were 78 percent, 88 percent and 46 percent, respectively.

The striking feature is that while the proportions of Chinese and Indian women who use effective contraceptive methods have increased a great deal over time, the proportion of Malays who do so has dropped, both among women in the same marriage cohorts and among those who have been married for equivalent durations: Whereas in 1974, 24 percent of Malay women in the 1965–1969 marriage cohort were using effective methods, 10 years later, only 15 percent of such women were doing so. The net result is that the ethnic disparity in the use of modern methods of birth control has widened.

A similar picture emerges when contraceptive use among women in the three ethnic groups is examined according to age-group rather than marriage cohort (not shown). Among both the Chinese and the Indian women, levels of use of effective methods increased for virtually every age-group over the 10-year period between the two surveys; however, among the Malays, levels of use of effective methods declined for every age-group (except 45–49-year-olds), and overall, use of effective methods in 1985 remained below that of the other two ethnic groups in 1974.

The 1984–1985 MPFS asked currently married women under age 35 about their contraceptive behavior during different birth intervals. The behavior of two 10-year marriage cohorts during the first four birth intervals is shown in Table 8. In interpreting the data, it must be kept in mind that they only reflect the contraceptive behavior of those members of the cohorts who had reached each specified interval. For example, not all women in the 1970–1979 marriage cohort who will ultimately have a third or fourth birth had done so by the date of the survey.

The data reveal a substantial increase in the use of birth control during the interval between marriage and first birth, but use during this interval is still quite uncommon. Most Malaysians regard pregnancy as a natural consequence of marriage, and

Table 7. Percentage of currently married women practicing contraception and percentage using effective methods, by marriage cohort, according to ethnic group, 1974 MFFS and 1984–1985 MPFS

Cohort	Chinese	Indians	Malays
1974 MFFS			
All methods			
1950–1954	45	54	25
1955–1959	57	50	26
1960–1964	56	56	29
1965–1969	54	37	31
Effective methods			
1950–1954	28	41	18
1955–1959	42	33	20
1960–1964	40	42	23
1965–1969	37	26	24
1984–1985 MPFS			
All methods			
1960–1964	68	88	47
1965–1969	78	88	46
1970–1974	75	78	44
1975–1979	61	63	46
Effective methods			
1960–1964	52	56	16
1965–1969	56	51	15
1970–1974	58	56	19
1975–1979	46	34	20

**Majun and jamu* are Malaysian herbs which, when taken with water by women, are considered to have a contraceptive effect.

a small proportion, particularly of Chinese couples, start trying to get pregnant before formal marriage.[19] This pattern contrasts with the situation in many Western countries where contraceptive use before and immediately after marriage is widespread. The data also indicate an increase in contraceptive use between births; that is, the proportion of members of the 1970–1979 cohort who practice contraception during given birth intervals is considerably higher than that of members in the 1960–1969 cohort.

Although contraceptive use between births has increased among women in all three ethnic groups, the levels of use differ. At each birth interval, the level of use is generally highest among the Chinese and lowest among the Malays, and the gap between the two groups widens with each successive birth order. Comparison of the ethnic differential between the 1960–1969 and the 1970–1979 cohorts shows that this differential has tended to grow larger.

The Chinese and Indian Transitions

In Malaysia, fertility among the Chinese has fallen very rapidly over the past 20 years and will almost certainly drop to replacement level before the year 2000. It is also likely, but less certain, that Indian fertility will do so, despite pockets of relatively high fertility among poorer Indians who work and live on the rural estates. Demographic transition theory could have predicted the rapid decline of Chinese and Indian fertility. By the mid-1960s, these groups had already met the three preconditions for substantial fertility decline identified by Ansley Coale—namely, that fertility was within the calculus of conscious choice; that reduced fertility was perceived to be advantageous; and that effective techniques of birth control or prevention were available.[20]

Explanations of the Chinese and Indian fertility transitions in Malaysia should be consistent with explanations of comparable transitions that have occurred among the overseas Chinese and Indians elsewhere in East and Southeast Asia. Rising standards of living often beget changes in material aspirations. Among the Chinese and Indians in Malaysia, recognition of the economic advantages of smaller families probably propelled fertility declines and became ever more evident as socioeconomic development accelerated.

The existence of readily available contraceptive methods was instrumental in helping Chinese and Indian couples control their reproduction. The religious prescriptions of these communities—most Chinese are Buddhists, and most Indians are Hindu—do not constrain the practice of birth control for limiting family size. The MPFS data show that ever-use of birth control is now virtually universal for these groups.[21] Of course, when socioeconomic conditions and motivation favor limiting family size, and when the means for doing so are readily available, ever-use of birth control is likely to be universal. However, there is still considerable scope for increased use of effective contraceptives by Chinese and Indians who currently practice contraception, particularly by Indians. It is probable that substantial proportions of women in these two communities, particularly the Chinese, resort to induced abortion to avoid unwanted births.

The spread and upgrading of education in Malaysia and elsewhere in East and Southeast Asia were the likely catalysts for change in the demographic behavior of the Chinese (and to a somewhat lesser extent that of the Indians). Education brought about a later age at marriage and heightened perceptions about the opportunity costs of early marriage and childbearing, particularly with respect to paid employment. The modern industrial and service sectors have expanded rapidly over the past two decades and have created a big manpower demand. Further, education increased couples' ability to understand the importance of practicing family planning effectively and of avoiding unwanted births. Finally, it increased awareness of the importance of acquiring skills for upward social and economic mobility.

Leveling of Malay Fertility

The leveling of Malay fertility over the past 10 years or so should be viewed within the context of longer term trends. It occurred after a significant fall in period fertility between 1957 and 1977, which had resulted from a trend toward an ever later age at first marriage. The later age at marriage led to a later age pattern of childbearing and was coupled with reductions in marital fertility at the longer durations of marriage among women of older childbearing ages and higher parity (implicitly shown in Table 3). Assessments of the leveling also need to take into account the temporary boost to period fertility indicators that resulted from making up for missed births by cohorts of women who married later; these women entered the prime childbearing ages and gave birth in the mid-1970s and early 1980s.[22]

Table 8. Percentage of currently married women using contraceptives, by birth interval, according to marriage cohort and ethnic group

Cohort and ethnic group	Marriage to 1st birth	1st to 2nd birth	2nd to 3rd birth	3rd to 4th birth
1960–1969				
Chinese	1	38	59	47
Indians	1	28	36	35
Malays	2	30	37	37
1970–1979				
Chinese	11	55	69	66
Indians	7	46	59	64
Malays	4	47	54	53

But why has Malay fertility apparently stabilized at around 4.5 births per woman rather than followed the rapid downward trend of Chinese and Indian fertility? One obvious factor is that because the Malays are more agrarian, they have not been subject to modernization forces to the same extent as have the other two communities in Peninsular Malaysia. The more rural lifestyle of the Malays, coupled with support from extended family members, lessens the economic costs of bearing and caring for children. However, these factors alone do not adequately explain the leveling of fertility, given the spread of education and economic and other welfare gains that have occurred among the Malay community.

Fertility trends among the Malays have not simply followed the so-called "logic of socioeconomic development and the momentum of demographic transition."[23] Explanations of their fertility changes, or the lack of them, are more complex. It is possible that value systems that are less susceptible to the prevention of births or to the spread of modern birth control methods have had as great an impact on Malay fertility as have the previously noted factors. The Malays adhere to the Islamic faith, and there has been a movement towards fundamentalism among some sections of that community since the mid-1970s. The spread of fundamentalism has had an impact on behavior. For example, among the more educated Malays, the rise of fundamentalism has affected perceptions about the role of women as well as the actual social behavior of women, particularly in rural areas.

The effects of the fundamentalist movement on Malay fertility are difficult to pinpoint; however, they have probably been largely responsible for the decline in the use of modern contraceptive methods and the rise in the use of traditional methods. Some sections of the Muslim community in neighboring southern Thailand have expressed opposition to the use of modern methods of birth control on religious grounds.[24] Fertility levels of the Thai Muslim minority are significantly higher than those of the Buddhist majority.

Although some predominantly Muslim countries, such as Indonesia, have experienced substantial fertility declines, the declines have occurred where there has been strong government backing for national family planning programs. Substantial fertility declines have also occurred among the Malays in neighboring Singapore.[25] However, the socioeconomic and political climate in Singapore, as well as its population policy, are quite different from that faced by the Malays in Malaysia.

There has also been widespread dissemination of the idea that resource-rich Malaysia with its relatively low population density is underpopulated. That idea was expressed by the government in early 1982 when it announced a New Population Policy with a target of 70 million inhabitants to be attained by the year 2100.[26] Following the announcement of the new policy, the government's message was widely disseminated in the media and measures such as income tax relief were introduced to encourage childbearing. The shift in government population policy occurred against a background of manpower shortages that arose in the late 1970s and early 1980s as the economy grew rapidly. Some economic planners considered that a larger population would create a larger domestic market to support and sustain industrial growth, which, in turn, would help reduce Malaysia's dependence on export-oriented industries.

With the change in population policy from antinatalism to pronatalism, the National Population and Family Planning Board was renamed the National Population and Family Development Board, and more emphasis was placed on its role in promoting family welfare and development. There had already been a steady fall in the number of new acceptors to the national family planning program in the late 1970s, but the fall was substantially greater following the announcement of the new population policy.[27] The publicity surrounding the announcement probably also contributed to the upward revision in birth expectations. The 1984–1985 MPFS found that Malays were more responsive to the government's New Population Policy than were the other ethnic groups.[28] In response to a question about their reaction to the new policy, a significant fraction of the sample of Malay women stated that they had revised their family size expectations upwards as a direct consequence of the government's message.

Table 9. Among currently married women, average number of children born and average expected, by marriage cohort, according to ethnic group, 1974 and 1984–1985

Marriage cohort	Chinese		Indians		Malays	
	1974	1984–1985	1974	1984–1985	1974	1984–1985
Children born						
1960–1964	4.2	4.9	4.6	5.4	4.0	5.8
1965–1969	3.0	4.2	3.0	4.6	2.6	4.9
1970–1974	1.1	3.5	1.1	3.8	1.0	3.8
1975–1979	na	2.6	na	2.8	na	2.7
1980–1984	na	1.1	na	1.0	na	1.1
Children expected						
1960–1964	4.6	5.0	5.0	5.5	5.2	6.6
1965–1969	4.0	4.4	3.9	4.9	4.5	6.1
1970–1974	3.5	3.9	3.1	4.1	3.9	5.7
1975–1979	na	3.5	na	3.7	na	5.1
1980–1984	na	3.2	na	3.1	na	4.9

Note: na=not applicable.

A comparison of birth expectation data for the same marriage cohorts in the 1984–1985 MPFS and the 1974 MFFS, shown in Table 9, indicates that for the 1970–1974 cohort of Malay women—the youngest for whom information is available in both surveys—there was an upward revision of almost two children in expected family size, from 3.9 in 1974 to 5.7 in 1984–1985. In fact, by 1984–1985, that cohort had almost achieved its expected family size as stated 10 years earlier. Even among Malays who first married in 1980–1984, expected family size is almost five children. There was also an upward revision in birth expectations among the Chinese and the Indians, albeit less marked and targeted at lower levels.

Of course, family size expectations can and do change rapidly, and they may not give a reliable indication of future behavior. The official population projections assume a modest decline in Malay fertility over the coming decade toward a family size of around four children per woman.[29] It is inconceivable that fertility will rise to levels that prevailed in the 1960s and before. Similarly, it is unlikely that fertility will decline substantially in the coming decade, despite the increase in the proportion of educated women of childbearing age and the fact that rates of urbanization among the Malays continue to increase (from just one in 10 in urban areas in 1957 to one in three in 1987).

Gay Ness and Hirofumi Ando have argued that it is prudent to take cognizance of political and organizational factors related to strengths and weaknesses of family planning programs.[30] In the Malaysian context, political and religious factors are closely interrelated. For example, the majority political party in the ruling national coalition, the United Malay National Organization, represents the interests of the Malays, and Islam is the official religion as enshrined in the national constitution. The principal Malay opposition party, Parti Islam Malaysia, which is strongest in the East coast states, bases its manifesto on fundamentalist Islamic principles. Both political and religious factors appear to have played a central role in the recent leveling of Malay fertility in Malaysia. Such factors are not taken into account in demographic transition theory. While that theory provides a useful perspective for assessing Chinese and Indian fertility trends in Malaysia, it has clear limitations for explaining recent fertility trends among the Malays.

References

1. T. H. Khoo, *1980 General Report of the Population Census, Vol. 1*, Department of Statistics Malaysia, Kuala Lumpur, 1983.

2. R. Leete, "The Post-Demographic Transition in East and South East Asia: Similarities and Contrasts with Europe," *Population Studies*, **41**:187, 1987.

3. M. S. Sidhu and G. W. Jones, *Population Dynamics in a Plural Society: Peninsular Malaysia*, University of Malaya, Kuala Lumpur, 1981; and B. Fernandez, "Trends and Differentials in Birth Cohort Fertility in Peninsular Malaysia," *Quarterly Review of Malaysian Population Statistics*, No. 6, 1987.

4. J. DaVanzo and J. Haaga, "Anatomy of a Fertility Decline: Peninsular Malaysia, 1950–1976," *Population Studies*, **36**:373, 1982; and H. Arshat et al., *Marriage and Family Formation in Peninsular Malaysia*, National Population and Family Development Board, Kuala Lumpur, 1988.

5. R. Leete and K. K. Kwok, "Demographic Changes in East Malaysia and Their Relationship With Those in The Peninsula, 1960–1980," *Population Studies*, **40**:83, 1986.

6. T. H. Khoo, 1983, op. cit. (see reference 1).

7. H. Arshat et al., 1988, op. cit. (see reference 4).

8. Ibid.

9. R. Chander et al., *Malaysian Fertility and Family Survey 1974*, Department of Statistics and National Family Planning Board, Malaysia, 1977.

10. T. H. Khoo, 1983, op. cit. (see reference 1).

11. Department of Statistics Malaysia, *Population Projections Malaysia 1980–2000*, Kuala Lumpur, 1987.

12. J. DaVanzo and J. Haaga, 1982, op. cit. (see reference 4) and H. Arshat et al., 1988, op. cit. (see ref. 4).

13. R. Leete and A. B. Tan, "Fertility Trends Among Ethnic Groups in Malaysia," in I. Alam, T. Hull and P. McDonald, eds., *The Revolution in Asian Fertility*, Oxford University Press, 1989 (forthcoming).

14. Department of Statistics Malaysia, 1987, op. cit. (see reference 11).

15. Ibid.

16. K. K. Kwok, *Estimates of Levels and Trends of Fertility of Administrative Districts, Peninsular Malaysia, 1970 and 1980*, Asian Population Studies Series, No. 62-H, Economic and Social Commission for Asia and the Pacific, Bangkok, 1986.

17. H. Arshat et al., 1988, op. cit. (see reference 4).

18. Government of Malaysia, *First Malaysia Plan 1966–70*, National Printing Department, Kuala Lumpur, 1965.

19. H. Arshat et al., 1988, op. cit. (see reference 4).

20. A. J. Coale, "The Demographic Transition Reconsidered," *International Population Conference, Liege 1973*, Vol. 1, International Union for the Scientific Study of Population, Liege, 1973.

21. H. Arshat et al., 1988, op. cit. (see reference 4).

22. Department of Statistics Malaysia, 1987, op. cit. (see reference 11) and R. Fernandez, 1987, op. cit. (see reference 3).

23. C. Hirschman, "The Recent Rise in Malay Fertility: A New Trend or a Temporary Lull in a Fertility Transition?" *Demography*, **23**:161, 1986.

24. J. Knodel, A. Chamratrithirong and N. Debavalya, *Thailand's Reproductive Revolution*, University of Wisconsin, Madison, 1987.

25. Singapore Family Planning and Population Board, *Population Projections for Singapore, 1980–2030*, 1983.

26. Government of Malaysia, *Midterm Review of the Fourth Malaysia Plan*, National Printing Department, Kuala Lumpur, 1984.

27. N. P. Tey, B. A. Tan and H. Arshat, "Profiles of Family Planning Acceptors in the National Programme," *Malaysian Journal of Reproduction and Health*, **3**:14, 1985.

28. H. Arshat et al., 1988, op. cit. (see reference 4).

29. Department of Statistics Malaysia, 1987, op. cit. (see reference 11).

30. G. D. Ness and H. Ando, *The Land is Shrinking: Population Planning in Asia*, Johns Hopkins University, Baltimore, 1984.

Resumen

En la Malasia peninsular, la tasa global de fecundidad (TGF) disminuyó entre 1957 y 1977 de 6,2 hijos a 4,0 hijos por mujer, registrándose bajas en todos los grupos étnicos principales (chinos, indios y malayos). En 1988, sin embargo, la TGF de chinas e indias era, respectivamente, de 2,3 y 2,8 hijos por mujer, pero de 4,5 para las malayas. La estabilización de la fecundidad entre éstas últimas durante los últimos 10 años obedece, ante todo, al auge de los principios islámicos fundamentalistas y a una política oficial pronatalista.

Los datos de la Encuesta Demográfica y Familiar Malaya de 1984–1985 indican que las casadas de origen chino e indio son considerablemente más propensas que las malayas a practicar la anticoncepción (64 por ciento y 66 por ciento contra 41 por ciento, respectivamente). Además, de 1974 a 1985, el uso de métodos anticonceptivos eficaces aumentó entre chinas e indias, pero decreció entre las malayas. Hacia 1985, el porcentaje de malayas que recurrían a métodos populares tradicionales era superior al de usuarias de la píldora, que había sido hasta entonces el método más difundido.

Résumé

Dans la péninsule malaisienne, l'indice synthétique de fécondité a diminué entre 1957 et 1977 de 6,2 à 4,0 enfants par femme, cette baisse ayant touché tous les principaux groupes ethniques (chinois, indiens et malais). En 1988, cependant, l'indice synthétique de fécondité des Chinoises et des Indiennes était, respectivement, de 2,3 et 2,8 enfants par femme, mais de 4,5 enfants chez les Malaisiennes. Parmi celles-ci, la stagnation plus récente de la fécondité en Malaisie provient, en grande partie, d'un renouveau du mouvement fondamentaliste islamique, et d'une politique gouvernementale pro-nataliste.

Les données de l'Enquête malaisienne démographique et de la famille réalisée entre 1984 et 1985, indiquent que les femmes mariées d'origine chinoise ou indienne sont considérablement plus susceptibles d'utiliser un moyen contraceptif que les femmes d'origine malaisienne (64 et 66 pour cent contre 41 pour cent, respectivement). D'autre part, entre 1974 et 1985, l'utilisation des méthodes efficaces a augmenté parmi les Chinoises et les Indiennes, mais a baissé parmi les Malaisiennes. Fin 1985, le pourcentage de Malaisiennes qui recouraient aux méthodes traditionnelles dépassait celui des usagères de la pilule, auparavant la méthode anticonceptionnelle la plus populaire.

The Effect of Counseling on Sterilization Acceptance by High-Parity Women in Nigeria

> **"A sterilization rate of 13 percent among high-parity women . . . may not seem impressive when compared to the worldwide prevalence of voluntary female sterilization. However, it is notable among Nigerian women. . . . "**

By Alexander E. Omu, Sharon S. Weir, Barbara Janowitz, Deborah L. Covington, Peter R. Lamptey and Nadine N. Burton

Summary

To inform women of the risks associated with high parity and to increase understanding of birth control methods, especially voluntary surgical contraception, the University of Benin Teaching Hospital launched a family planning and education program for pregnant women who had had four or more previous deliveries. More than 1,000 high-parity women admitted for prenatal care during a 19-month period were randomly allocated either to a treatment group exposed to four individualized counseling sessions on family planning methods and the health risks associated with high parity or to a control group that received only the standard family planning information provided at the prenatal clinic.

Overall, 71 percent of the women in the treatment group were using an effective method of birth control at six weeks postpartum, compared with 51 percent of the women in the control group. About 40 percent of women in both groups had indicated at admission that they did not want more children, but women in the treatment group were significantly more likely to choose female sterilization as their postpartum contraceptive method than women in the control group—13 percent, compared with three percent. By age, the proportions sterilized in the treatment group ranged from four percent of those younger than 30 to 28 percent of those 35 and older; comparable proportions for the control group were two percent and nine percent, respectively. Six percent of women in the treatment group who had four living children underwent sterilization, compared with 46 percent of those with seven or more living children. Among control patients, the proportions were zero and five percent, respectively.

Background

During pregnancy, women older than 35 and women who have had four or more children are at increased risk of hemorrhage and high blood pressure, two of the most common causes of maternal death in developing countries.[1] Because women in the developing world often start to have children in their late teens or early twenties and do not practice family planning to space their pregnancies, women often achieve high parity at a comparatively young age and are thus exposed to the dangers of high-risk pregnancies for many years. As a result, most women in regions where the total fertility rate is high face an elevated risk of maternal morbidity and mortality during their later childbearing years. It is, therefore, important for high-parity women to have access to a trouble-free, reliable method of contraception to protect them from potentially dangerous pregnancies.

Voluntary female sterilization is one of the most widely used methods of contraception, especially among women over the age of 35, in every region of the world except Sub-Saharan Africa. Among currently married women aged 35–44 practicing contraception, 43 percent in Asia, 42 percent in Latin America and 25 percent in the Middle East rely on sterilization. In contrast, only eight percent of comparable women in Sub-Saharan Africa have undergone sterilization.[2]

Nigeria has one of the lowest rates of female sterilization in the region: Less than one percent of older women practicing contraception are sterilized.[3] In part, this is because Nigerian family planning programs are new. Until recently, there was little demand for family planning programs as a result of the widespread traditional desire for large families. A majority of Nigerian women want another child immediately after or within a year of delivering their last baby.[4] The 1981–1982 Nigeria World Fertility Survey found that urban women aged 35–44 with four or more children still wanted an average of two more children; the total fertility rate in Nigeria was 6.3.[5]

Extended breastfeeding and postpartum abstinence have traditionally provided for birthspacing and protected Nigerian women from some high-risk pregnancies, but rapid urbanization and other social changes are fast eroding these traditional practices. Yet, public knowledge and utilization of family planning methods, especially sterilization, are still very low. Only 32 percent of Nigerian women aged 15–44 know of any method of contraception, modern or traditional. Furthermore, just seven percent have heard of voluntary surgical contraception.[6]

By contrast, in Kenya, Senegal and Zimbabwe—African countries with comparatively more exposure to family planning programs—at least 45 percent of women 15–44 know of female sterilization.[7] In those countries, family planning utilization is growing at a faster pace, reflecting the increased availability of services and of information and education programs.

According to a 1980 survey of women delivering at three hospitals in Benin, Nigeria, major reasons for not using contraception were spousal opposition, religious

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values and fear of side effects.[8] Another study, at the University of Benin Teaching Hospital, found that women who had had more than four deliveries represented 20 percent of maternity patients but accounted for 55 percent of maternal deaths at the hospital.[9] On the basis of these studies and his own research and clinical experience in obstetrics and gynecology, the senior author of this article decided to launch a project in collaboration with Family Health International that would implement and evaluate a family planning information and education program for high-parity women. The program would attempt to inform these women of the dangers associated with multiple pregnancies and of the availability, safety and effectiveness of all methods of contraception. It would also stress the appropriateness of voluntary surgical contraception for high-parity women.

The setting for the project was University of Benin Teaching Hospital, a 450-bed referral hospital that serves a catchment area of approximately four million inhabitants. About 4,000 deliveries per year occur at the hospital; a 1981 obstetric surveillance study found that one-third of the deliveries were for a fourth-order birth or higher.[10]

The project's goal was to demonstrate that taking the time to educate and inform women at risk of pregnancy complications because of high parity would increase the acceptability of postpartum family planning in a population otherwise reluctant to accept any method of contraception, especially surgical methods. Guidelines for the program were based on the premise that counseling must elicit an informed and free choice. The counselors' responsibility was threefold: They were to assess the readiness of the woman to end her fertility, provide complete information to the patient about the risk associated with surgical contraception and inform her of the availability of reversible methods. Women included in the study received no inducement to participate. Those who selected sterilization went through a careful informed-consent procedure that included information about the permanence of the method, ample time to reflect on their decision without external pressures and a witnessed signature.

The objectives of the evaluation component were to determine whether the program affected the demand for voluntary surgical contraception among high-parity women delivering at the University of Benin Teaching Hospital, whether counseling improved the understanding of and attitudes toward sterilization among these women, and whether the information and education increased the postpartum demand for all family planning methods by high-risk women.

Methods

In this study, a high-parity woman was defined as one who had had four or more previous deliveries and was at or beyond the 28th week of gestation. All high-parity women who were scheduled to deliver at the hospital and who had attended its prenatal clinic during a 19-month period were included in the study, except women for whom a physician had recommended sterilization for medical reasons. The study ran from September 1984 through March 1986.

By a random allocation process, high-parity women were assigned to one of two groups at the time of their initial visit to the prenatal clinic. One group became the treatment group and was exposed to an information and education program that included individualized counseling on family planning and the health risks associated with high parity. The second group became the control group.

Women in the treatment group were to receive information four times: at admission to the study (during the 29th to 35th weeks of gestation), during a prenatal visit after the 36th week of pregnancy, during hospitalization for delivery and at six weeks postpartum. Nurses conducted the first and third counseling sessions; physicians did the second and fourth. They were trained for the counseling by staff members from Family Health International according to a protocol developed with the Association for Voluntary Surgical Contraception and using materials provided by that organization.

The protocol called for the treatment group to receive information on the health effects of high parity and the benefits of family planning at the first, third and fourth sessions. Education regarding all methods of contraception was scheduled for the second and third sessions. Voluntary surgical contraception was presented in some detail, and the advantages and limitations of the method were discussed in the context of high-risk pregnancies. Those who expressed interest in sterilization received more in-depth counseling at the second, third and fourth sessions to ensure that they fully understood the permanence of the method and potential complications associated with the surgical procedure.

The control group received only the

Table 1. Percentage distribution of high-parity women at the University of Benin Teaching Hospital, by study group, according to various characteristics, Nigeria, 1984–1986

Characteristics	All women (N=1,012)	Treatment group (N=509)	Control group (N=503)
Age			
20–24	4.5	5.7	3.4
25–29	30.3	28.3	32.4
30–34	37.8	39.9	35.8
35–39	21.3	21.6	21.1
≥40	5.0	4.1	6.0
Unknown	0.9	0.4	1.4
Ethnicity			
Edo	53.3	51.9	54.7
Ibo	14.6	14.3	14.9
Ishan	10.4	11.2	9.5
Other	21.5	22.2	20.9
Unknown	0.2	0.4	0.0
Education			
None	16.4	17.3	15.5
Primary	52.4	49.9	54.9
Secondary	17.0	17.5	16.5
Postsecondary	14.1	15.1	13.1
Unknown	0.1	0.2	0.0
Religion			
Protestant	42.5	45.0	40.0
Catholic	27.2	26.9	27.4
Traditional	24.5	22.4	26.6
Other	5.2	5.1	5.4
Unknown	0.6	0.6	0.6
Previous deliveries			
4	26.3	26.9	25.6
5	30.3	28.9	31.8
6	21.9	24.8	19.1
≥7	21.3	19.3	23.5
Unknown	0.1	0.2	0.0
Living children			
0–3	9.6	9.2	9.9
4	32.9	34.0	31.8
5	30.3	29.3	31.4
6	16.1	17.9	14.3
≥7	11.0	9.4	12.5
Unknown	0.1	0.2	0.0
Infant deaths			
0	70.3	70.5	70.0
1	22.5	23.2	21.9
≥2	7.1	6.1	8.2
Unknown	0.1	0.2	0.0
Cesarean sections			
None	92.6	92.1	93.0
1	6.1	6.3	6.0
≥2	1.1	1.2	1.0
Unknown	0.1	2.0	0.0
Planned method			
Sterilization	8.2	9.4	7.0
Pills/injectables	45.8	45.2	46.3
IUD	16.4	17.1	15.7
Other*	16.8	18.3	15.5
None	11.9	9.0	14.7
Unknown	0.9	1.0	0.8
Total	100.0	100.0	100.0

*Includes condoms, contraceptive foams and jellies, abstinence, breastfeeding, rhythm and withdrawal.

standard family planning information usually provided at the clinic. Although all the methods of contraception available at the hospital were discussed, the information did not stress the increased risks associated with high parity. The staff providing this counseling had received no special training in information and education procedures and did not follow a standard protocol. The information they provided on surgical contraception was incomplete and did not address the major fear of women in the Benin region: that sterilization in this lifetime would make them infertile in subsequent reincarnations.

At the time of their enrollment in the study, women in both the treatment and the control groups were interviewed to obtain information on their social and demographic characteristics, as well as on their knowledge of contraceptive methods, contraceptive use and desire for additional children. Sterilizations were performed at delivery or immediately postpartum. Women from both groups were also interviewed at six weeks postpartum to obtain information on delivery outcomes, contraceptive plans and attitudes toward sterilization. Hospital records were checked to identify sterilized women who failed to return for their postpartum visit. Women who were not interviewed at six weeks and who did not have a sterilization record were assumed not to have been sterilized.

More than 99 percent of those admitted to the study were interviewed at admission. Almost 90 percent of the women in the treatment group received counseling all four times; only two did not attend any sessions. In addition, more than 90 percent of the women were interviewed at six weeks postpartum. A patient's failure to return for prenatal visits and at six weeks postpartum was the primary reason that patients missed counseling sessions or did not have a follow-up interview.

Patient Characteristics

More than 1,000 high-parity women were admitted for prenatal care during the study period. Baseline social, demographic and reproductive health characteristics are presented in Table 1 (page 67). There were no significant differences between the treatment and control groups with regard to any of the characteristics surveyed. Neither were any differences found between women who returned at six weeks postpartum and those who failed to return. Since the random allocation succeeded in creating similar treatment and control groups, and since the women who did not complete follow-up were similar to those who did, we feel confident in attributing any differences in sterilization rates to the information and education program.

Women in the study had a mean age of 31, and 90 percent were aged 25–39. However, five percent of the women pregnant with their fifth-order birth or higher were aged 20–24, and five percent were 40 or older. More than half came from one ethnic group, the Edo; 15 percent were Ibo, 10 percent Ishan and the remaining 22 percent came from at least 10 other smaller ethnic groups. The high-parity women who deliver at the teaching hospital in Benin are urbanized and better educated than are most Nigerian women. Almost 85 percent of the women had had at least a primary education, and 14 percent had had some postsecondary schooling. Forty-three percent of the high-parity women were Protestant, 27 percent were Catholic and 25 percent followed a traditional religion.

As for reproductive health characteristics, 43 percent of the women had six or more previous deliveries, and 21 percent had seven or more. Only seven percent of the women, however, had ever had a cesarean section. In spite of the high parity, 10 percent of the women currently had fewer than four living children, and only half of those who had borne seven or more children had that many living children. Overall, 30 percent of the women had experienced the loss of at least one child in its first year of life, and seven percent had seen two or more children die as infants.

The women in the study were more knowledgeable about family planning than are most Nigerian women. Forty-five percent of them knew about female sterilization, and more than 85 percent knew about injectables, IUDs and oral contraceptives (not shown). In addition, 32 percent had used oral contraceptives at some point, 11 percent had used the IUD and seven percent had used injectables. As Table 1 shows, 87 percent planned to use a contraceptive method after delivery, including eight percent who said at their first prenatal visit that they planned to be sterilized.

Table 2 contains information on the women's attitudes toward their current pregnancy and whether they desired more children. Fifty-five percent of the women said they wanted their current pregnancy as well as more children, 30 percent said they wanted the current pregnancy but no more children and 11 percent said they wanted neither the current pregnancy nor more children. The latter proportion increased with the number of living chil-

Table 2. Percentage distribution of high-parity women, by study group and number of living children, according to desire to limit family size

Group and no. of living children	N	Wanted current pregnancy and more children	Wanted current pregnancy but no more children	Didn't want current pregnancy or more children	Not sure	Total
TOTAL						
All	**1,011***	**54.7**	**30.0**	**11.3**	**4.0**	**100.0**
0–3	97	82.5	15.5	0.0	2.0	100.0
4	333	70.3	21.9	2.7	5.1	100.0
5	307	55.7	32.6	8.8	2.9	100.0
6	163	33.1	39.9	22.7	4.3	100.0
≥7	111	13.5	45.9	36.9	3.7	100.0
TREATMENT						
All	**508***	**57.0**	**30.3**	**9.6**	**3.1**	**100.0**
0–3	47	91.5	6.4	0.0	2.1	100.0
4	173	69.9	24.9	1.7	3.5	100.0
5	149	60.4	30.9	5.4	3.3	100.0
6	91	30.8	41.8	24.2	3.2	100.0
≥7	48	16.7	50.0	33.3	0.0	100.0
CONTROL						
All	**503**	**52.5**	**29.8**	**12.9**	**4.8**	**100.0**
0–3	50	74.0	24.0	0.0	2.0	100.0
4	160	70.6	18.8	3.8	6.8	100.0
5	158	51.3	34.2	12.0	2.5	100.0
6	72	36.1	37.5	20.8	5.6	100.0
≥7	63	11.1	42.9	39.7	6.3	100.0

*Excludes one woman who refused to be interviewed.

dren, so that slightly more than one-third of the women with seven or more children said that they did not want the current pregnancy. Only among women expecting at least their seventh child did more than half report that they did not want any more children.

Unless women were to change their minds, these data indicate that only 40 percent would be candidates for female sterilization, and fewer than 25 percent of women with four living children might be interested. Among those who did not want any more children, almost half (48 percent) said they could not afford more children, and 14 percent gave health reasons.

Data collected at six weeks postpartum indicate that most women in the study delivered vaginally; only three percent had a cesarean section. Among 97 percent of the women, the baby was still alive at the time of the interview; among two percent, the child had died after a live birth. The remainder of the women experienced a miscarriage or a stillbirth. One woman was known to have died, and 84 did not return at six weeks.

Counseling Results

Women in the treatment group were more likely to choose sterilization than were women who received no special information—13 percent, compared with three percent. The difference was statistically significant ($p<0.001$). The proportion of women sterilized is presented in Table 3, according to various social, demographic and reproductive characteristics. In every category, women in the treatment group were more likely than women in the control group to undergo sterilization. This was especially true among counseled women in the 30–34 age-group and those with seven or more living children, both of whom were about 10 times more likely than controls to choose sterilization.

Within the treatment group, the older a woman was and the more children she had, the more likely she was to choose sterilization. This association probably reflects the counseling on increased health risks among high-parity and older women. Among women in the control group, only those 35 or older were significantly more likely to be sterilized; parity had no effect. Regardless of study group, the proportions choosing sterilization were small among women who had four or fewer children, not counting the current delivery.

In both groups, there was little variation by ethnicity, education and religion in the proportion of women who chose to be sterilized. Women who delivered by cesarean section, however, were more likely to obtain a sterilization than were women who delivered vaginally: Half of the women in the treatment group and a quarter of those in the control group who delivered by cesarean section obtained sterilizations, compared with 12 percent and three percent, respectively, of those who delivered vaginally. Two of the six women in the treatment group who had cesareans and opted for sterilization had had three prior cesarean deliveries and would have been strongly advised by their obstetrician to select a permanent method of contraception. According to the protocol, they should not have been included in this study. If they are excluded from the analysis, the overall sterilization rate declines slightly (to 12.6 percent), but the difference between the groups remains significant.

Almost 80 percent of the women in the treatment group who said that they planned to be sterilized went through with the operation. This was true for only 43 percent of the control group. Unless they have a solid understanding of sterilization, women who express interest in the procedure may not feel strongly enough to follow through on their desire. The proportion of women in the treatment group who were sterilized was lower among those who had planned to use a clinical method than among those who had planned to use other methods. Perhaps women who are knowledgeable about other effective methods are less likely to choose sterilization.

In both groups, women who wanted neither the current pregnancy nor more children were the most likely to choose sterilization, with 39 percent of the treatment group and 11 percent of the control group doing so. Among women who wanted the current pregnancy but no more children, 23 percent of the treatment group chose sterilization, as did six percent of the control women. A few women (nine in the treatment group and one in the control group) who said at admission to the program that they wanted more children also decided to be sterilized; three of these women had indicated at admission that they planned to be sterilized. Three other women had cesarean sections for this delivery and had medically indicated sterilizations; the remaining four may have changed their minds about having more children.

Table 3. Percentage of women who underwent sterilization, by various characteristics, according to study group

Characteristic	Treatment		Control	
	%	N	%	N
Total	**13.0**	**509**	**3.4**	**503**
Age				
<30	3.5	173	1.7	180
30–34	11.8	203	1.1	180
≥35	27.5	131	8.8	136
Unknown	0.0	2	0.0	7
Ethnicity				
Edo	12.9	264	3.3	275
Ibo	12.3	73	4.0	75
Ishan	10.5	57	4.2	48
Other	14.8	115	2.9	105
Education				
None	15.9	88	2.6	78
Primary	11.8	254	2.5	276
Secondary	14.6	89	6.0	83
Postsecondary	11.7	77	4.5	66
Unknown	0.0	1	0.0	0
Religion				
Catholic	13.1	137	3.6	138
Protestant	14.8	229	2.5	201
Traditional	11.4	114	4.5	134
Other/unknown	3.4	29	3.3	30
Living children				
0–3	4.3	47	4.0	50
4	5.8	173	0.0	160
5	8.7	149	5.7	158
6	20.9	91	4.2	72
≥7	45.8	48	4.8	63
Unknown	0.0	1	0.0	0
Type of delivery				
Vaginal	12.2	460	2.8	436
Cesarean	50.0	12	26.7	15
Miscarriage	0.0	2	0.0	0
Unknown	11.4	35	1.9	52
Contraceptive plan at admission				
Sterilization	79.2	48	42.9	35
Pills, injectables, IUD	4.1	317	0.3	312
Other/unknown	14.3	98	0.0	82
None	2.2	46	1.4	74
Family limitation desires				
Didn't want pregnancy/ didn't want more	38.8	49	10.8	65
Wanted pregnancy/ didn't want more	23.4	154	6.0	150
Wanted pregnancy/ wanted more	3.1	290	0.4	264
Unknown	12.5	16	0.0	24

Sixty-six women in the treatment group underwent sterilization following childbirth. Although 63 women reported at the end of the first counseling session that they wanted to be sterilized, only 45 of those women carried through with their decision. An additional 24 women selected sterilization at later counseling sessions, and 21 of them actually had the operation. Although 68 percent of the women who chose sterilization made their decision in the first counseling session, the later sessions may have been of greater benefit than implied by these data: More women might have changed their minds if there had been only one counseling session early in the prenatal period. The later sessions may

Table 4. Percentage distribution of women who had heard of sterilization, by attitude toward the operation, according to when questioned and treatment group

Attitude	At admission	Six weeks postpartum		
	All patients	Treatment group		Control group
		Sterilized	Not sterilized	
N	456	66	414	383
Operation is safe				
Agree	30.9	100.0	61.1	20.4
Disagree	17.8	0.0	31.4	30.0
No opinion	51.3	0.0	7.0	49.6
Unknown	0.0	0.0	0.5	0.0
Women are as strong as before				
Agree	22.4	98.4	62.1	19.8
Disagree	20.8	0.0	13.3	14.4
No opinion	56.8	1.6	24.2	65.8
Unknown	0.0	0.0	0.5	0.0
No change in sex drive				
Agree	30.5	91.9	64.0	18.3
Disagree	6.4	3.2	4.1	6.8
No opinion	63.1	4.8	31.4	74.9
Unknown	0.0	0.0	0.5	0.0
Woman's status does not change				
Agree	38.8	96.8	66.9	23.8
Disagree	8.1	1.6	18.8	6.8
No opinion	51.1	1.6	13.8	69.5
Unknown	2.0	0.0	0.5	0.0
Total	100.0	100.0	100.0	100.0

Note: Women who did not complete the baseline interview or who did not return at six weeks postpartum are excluded. The 17 women in the control group who were sterilized are also excluded.

have provided additional information to reinforce the original decision and helped some women who were unsure to make a decision.

At six weeks postpartum, women in the treatment group who had decided against sterilization were asked why. Thirty-three percent said they wanted more children, and 28 percent said they had done so because of fear of the operation or its complications. Another 16 percent said they did not want the operation because they believed sterilization might persist through reincarnation, six percent said their husband objected to sterilization and three percent said they preferred a reversible method. The remaining women gave a variety of reasons.

Understanding Sterilization

Counseling improved the understanding of female sterilization. At admission, only 45 percent of the women in the study had heard of the operation. Most of those who had heard of it did not understand the procedure, and they described it as an operation where the womb is tied or the womb is turned. Only seven percent understood sterilization to be having the fallopian tubes tied.

At six weeks postpartum, however, all of the treatment patients said they had heard of sterilization, and these women, especially those who had chosen sterilization, were the most well-informed about the operation. At six weeks postpartum, 61 of the 62 women in the treatment group who underwent sterilization and returned for the checkup correctly described the operation; almost 90 percent of counseled women who were not sterilized also gave a correct description. In comparison, 90 percent of women in the control group also said they had heard of sterilization, either during their admission interview or by talking with counseled women at the hospital. They still had a limited understanding of the surgery, however, with almost 90 percent describing it as tying or turning the womb.

Women who said they had heard of sterilization were asked about their attitudes toward it, and the results are shown in Table 4. At admission, between half and three-quarters of the women had no opinion or held an unfavorable opinion about whether the operation was safe, weakened women, changed women's sex drive or changed their status. By six weeks postpartum, attitudes toward the operation had improved among all counseled women. This improvement was especially great among those who were sterilized, but women in the treatment group who did not undergo the operation also had much more positive attitudes toward it than did those who were not counseled. For example, slightly more than 60 percent of those in the treatment group who were not sterilized said they believed the operation was safe, compared with 20 percent of women in the control group. Nonetheless, they were not as convinced as women who had the operation that there would be no ill effects. Women in the control group were just as uncertain about the operation at six weeks postpartum as they were at admission.

The program also had an important effect on contraceptive use after delivery. At admission, half of the women had never used a contraceptive method, but almost 90 percent said they planned to use a method after delivery. At six weeks postpartum, counseled women were significantly more likely than those in the control group to have followed through on their intentions ($p<0.001$), as is shown in Table 5. Seventy-one percent of the counseled women were using a medical or barrier method of contraception. In contrast, 51 percent of control women were using one of these methods.

Table 5. Percentage distribution of women using a contraceptive method at six weeks postpartum, by method, according to study group

Method	Treatment group (N=480)	Control group (N=453)
Clinical	70.5	50.8
Sterilization	13.8	3.8
Pill/injectable	35.2	27.8
IUD	19.6	17.0
Barrier	1.9	2.2
Traditional	14.5	18.6
None	14.1	28.9
Unknown	0.9	1.7
Total	100.0	100.0

Note: This table excludes women who were not sterilized and who did not return for the sixth week interview, because their contraceptive use is unknown.

Conclusions

The information and education program had a significant impact on a woman's decision to utilize a contraceptive method postpartum. In addition, counseled women of every ethnic and religious group were more likely to request sterilization. The study suggests that the current low rates of voluntary female sterilization may be due, in part, to a lack of knowledge and understanding of sterilization, since half of the women admitted to the program had never heard of the operation, and most of those who had did not understand what it entailed.

A sterilization rate of 13 percent among high-parity women counseled four times about the health impact of multiple births and the benefits of family planning may not seem impressive when compared to the worldwide prevalence of voluntary female sterilization. However, it is notable among Nigerian women for several reasons. First, the rate is almost twice as high as the seven percent sterilization rate among high-parity women at the same hospital in 1981.[11] Second, there is a strong preference for large families in Nigeria, where childbearing is of great social importance. Women may, therefore, be reluctant to choose a permanent method despite the risk to their health of further childbearing. Finally, one-fourth of the women in this study had experienced the death of a child during infancy, and 10 percent of them had experienced infant death following their most immediate previous pregnancy.

In this setting, consideration needs to be given to the cost-effectiveness of counseling women with less than a minimum number of children. Sixty-two percent of women in the treatment group who chose sterilization had six or more children, not including the current pregnancy, and 82 percent had five or more living children. If women with fewer than five children had been counseled only once, the number of counseling sessions would have decreased by a third, and the number of sterilizations would have decreased by no more than 10 percent, assuming rates similar to those in the control group.

Even women with five or more children may not need to have as many as four counseling sessions. Women who decide to be sterilized on their first visit may need only one additional session to be provided with more detailed information. Sessions should be conducted as early as possible after the 20th week of gestation to enable the couple to think through this important decision.

Another way to decrease the costs of the program could be to see only once those women who say at admission that they want more children, since this was the most common reason for not having the operation. If such women had had only one session, the number of sterilizations in the treatment group would have decreased by a maximum of 14 percent, and the number of counseling sessions would have declined by 44 percent.

While either strategy to limit the number of sessions would decrease program costs, it might also decrease the number of women who choose some other method of contraception. Some postpartum counseling on contraception is undoubtedly needed for all women.

One-fourth of women said they chose not to undergo sterilization because of fear or dislike of surgery. Therefore, the program obviously needs to emphasize the safety of the operation in order to allay these fears. Overall, the program had an impressive impact on women's knowledge and attitudes toward female sterilization. Improvement in these areas may translate into an increased demand for sterilization services later, either among those exposed to the program or among those with whom they share information.

A good counseling program, however, must be designed to help women understand all methods of family planning. This will enable them to make well-informed, well-considered decisions about their fertility. The process should not attempt to persuade a couple to select a particular method, such as sterilization. If the process has been respectful of individual preferences, the chances that the couple will regret the sterilization decision will be minimized. Satisfied clients can then become advocates for family plannning, and their support will increase demand for services and help to reduce maternal mortality.

References

1. W. Rinehart, A. Kols and S. Moore, "Healthier Mothers and Children Through Family Planning," *Population Reports*, Series J, No. 27, May–June 1984.

2. K. London et al., "Fertility and Family Planning Surveys: An Update," *Population Reports*, Series M, No. 8, Sept.–Oct. 1985.

3. National Population Bureau, *Nigeria Fertility Survey, 1981–1982: Principal Report*, Vols. I & II, Lagos, 1984.

4. K. London et al., 1985, op. cit. (see reference 2), Table 7.

5. National Population Bureau, 1984, op. cit. (see reference 3).

6. Ibid., Table 4.2.1–1.

7. K. London et al., 1985, op cit. (see reference 2), Table 3.

8. A. E. Omu and J. A. Unuigbe, "Acceptance of Contraception Practice by Grandmultipara in Benin City, Nigeria," *International Journal of Gynaecology and Obstetrics*, **24**:145, 1986.

9. S. Okojie, "Maternal Mortality at the University of Benin Teaching Hospital," in D. A. Ojo et al., eds., *Obstetrics and Gynaecology in Developing Countries*, 1977, p. 280–286.

10. Family Health International, "A Report on Obstetric Deliveries at the University of Benin Teaching Hospital in Benin City, Nigeria," Research Triangle Park, N.C., July 1983.

11. Ibid.

Resumen

A efectos de informar a las mujeres de los riesgos de la alta paridad y hacer que se comprendan mejor los métodos de regulación de la fecundidad, el Hospital Académico de la Universidad de Benin ha emprendido un programa de planificación familiar y educación para embarazadas que hayan dado a luz cuatro o más veces. Durante un período de 19 meses, más de 1.000 mujeres de esta categoría que habían acudido para recibir asistencia prenatal fueron asignadas al azar, o bien a un grupo terapéutico a cuyas integrantes se les ofrecieron cuatro sesiones de asesoramiento individual acerca de métodos anticonceptivos y los peligros que suponía para la salud una alta paridad, o bien a un grupo de control que sólo recibió la información sobre planificación familiar que la clínica prenatal ofrece habitualmente.

En términos generales, a las seis semanas post-parto, utilizaba algún método anticonceptivo eficaz el 71 por ciento de las mujeres del grupo terapéutico, contra el 51 por ciento de las del grupo de control. Cerca del 40 por ciento de las integrantes de ambos grupos habían indicado, a la entrevista inicial, que no querían tener más hijos, pero las del grupo terapéutico se manifestaban significativamente más propensas que las del grupo de control a optar por la esterilización femenina como método anticonceptivo post-parto—13 por ciento contra tres por ciento. Según la edad, la proporción de esterilizadas del grupo terapéutico variaba del cuatro por ciento para las menores de 30 años al 28 por ciento para las de 35 años o más. En el grupo de control, las cifras correspondientes eran, respectivamente, del dos y nueve por ciento. En el grupo terapéutico, decidió esterilizarse el seis por ciento de las mujeres que tenían cuatro hijos vivos, frente al 46 por ciento de las que tenían siete o más. Entre las del grupo de control, los respectivos porcentajes fueron de cero y cinco por ciento.

Résumé

Afin d'informer les femmes des risques que comporte une parité élevée et d'améliorer leur compréhension des moyens anticonceptionnels, surtout la stérilisation chirurgicale, l'Hôpital Académique de l'Université de Bénin a lancé un programme de planning familial et d'éducation destiné aux femmes enceintes ayant déjà eu au moins quatre accouchements. Pendant une période de 19 mois, plus de 1.000 femmes à parité élevée, venues recevoir des soins prénatals, ont été placé de façon aléatoire soit dans un groupe thérapeutique dans lequel on leur offrit quatre cours sur les méthodes de contraception et les risques que comporte une parité élevée, soit dans un groupe de contrôle où ne leur était donnée que l'information standard dispensée pendant les consultations prénatales.

En général, 71 pour cent des femmes du groupe thérapeutique utilisaient une méthode de contraception efficace à la sixième semaine post-natale, comparé à 51 pour cent des femmes du groupe de contrôle. Dès leur entrée au programme, près de 40 pour cent des participantes des deux groupes avaient mentionné ne plus vouloir d'enfant, mais après l'accouchement, celles du groupe thérapeutique étaient sensiblement plus susceptibles que celles du groupe de contrôle d'opter pour la stérilisation comme méthode contraceptive—13 contre trois pour cent. Selon l'âge, la proportion de femmes stérilisées du groupe thérapeutique s'échelonnait entre quatre pour cent de celles ayant moins de 30 ans à 28 pour cent de celles ayant 35 ans ou plus. Dans le groupe de contrôle, les chiffres correspondants étaient de deux et neuf pour cent respectivement. Dans le groupe thérapeutique, six pour cent des femmes ayant eu quatre enfants décidèrent de se faire stériliser, ce chiffre étant de 46 pour cent parmi les femmes qui avaient eu sept enfants ou plus. Dans le groupe de contrôle, les pourcentages respectifs étaient de zéro et de cinq pour cent.

DIGEST

In Mali, Marriage Is Early, Childbearing Is Frequent And Modern Contraceptive Practice Is Uncommon

The strong pronatalism of the inhabitants of Mali and their lack of access to family planning services are clearly reflected in the country's high total fertility rate of 6.7 children per woman, their pattern of very early marriage and the low level of contraceptive prevalence. The use of modern birth control methods is limited almost exclusively to younger, urban women with some schooling. Although half of all women in a union say they want to either space or limit their births, only 11 percent of those who do not practice contraception intend to use a method in the near future. The attitude of men toward family planning is considerably more conservative than that of women: Only 17 percent of men approve of it, compared with 71 percent of women. These are some of the findings from the Enquête Démographique et de Santé au Mali (EDS), carried out in 1987 among a sample of 3,200 women aged 15–49, a sample of 970 husbands aged 20–55 and a sample of 1,538 children aged 6–36 months.[1]

Mali, a landlocked West African country of 7.6 million, is bordered by Algeria to the north, Côte d'Ivoire and Guinea to the south, Niger to the east and Senegal and Mauritania to the west. The Bambara are the largest ethnic group in the country, followed by the Peul, the Sarakolé, the Malinké and the Dogon. Seventy-four percent of the population live in rural areas. Islam is the principal religion of Malians, and the practice of polygamy is quite common.

Overall, only 13 percent of women in Mali can read. Fifteen percent have had some schooling—14 percent, a primary education and one percent, a secondary education. However, education levels are rising slightly: Twenty percent of women under 30 have had some schooling, compared with just eight percent of those 30 and over. Further, urban women are much more likely than their rural counterparts to have received a primary education (35 percent vs. seven percent), and the proportion of women who have done so reaches 41 percent in Bamako, the country's capital.

Men in Mali are more likely than their wives to be literate: Sixty-nine percent can read with at least some proficiency. Nevertheless, only 23 percent of men have had formal schooling—16 percent a primary education and seven percent a secondary or higher education.

Nuptiality and Fertility

The median age at marriage among Malian women, 15.7 years, is one of the lowest in Africa. Although this age has remained below 16 for at least the past 35 years, there is some indication that younger women and those with a primary education are now marrying slightly later than did their older, uneducated counterparts: In 1987, the median age at marriage among urban women aged 20–24 was 16.2, while among those aged 45–49 it was 15.4; likewise, the median was 15.7 among women with no education, 16.3 among those with primary schooling and 19.2 among the few women with a secondary education.

By the time they reach their middle 20s, all Malian women have married; even among 15–19-year-olds, the proportion married is as high as 75 percent. At the time of the survey, 92 percent of female respondents were currently married, and almost half (45 percent) of such women were in a polygamous union. As expected, the proportion of women in a polygamous union increases with age, from 28 percent of 15–19-year-olds to 63 percent of 45–49-year-olds. Further, such unions are more prevalent among rural women than among urban women (48 percent vs. 37 percent).

In general, men marry later than women: Whereas 80 percent of 20–24-year-old men are single, only eight percent of 30–34-year-olds are unmarried. By the time they have reached their middle 40s, all men have married at least once. At the time of the survey, 25 percent of men were practicing polygamy. As is the case with women, older men are more likely than their younger counterparts to be in polygamous unions: Three percent of those under 30 were in such unions, compared with 34 percent of those 30 or over. The proportion of men in such unions decreases considerably with education: Twenty-seven percent of men with no schooling are polygamous, as are 18 percent of those with a primary education and only 10 percent of those with a secondary education.

In 1987, among women in all age-groups, the median age at first birth was 18.9. However, urban women were slightly older at first birth than were rural women (19.2 vs. 18.8). In Bamako, the median age was considerably higher among women aged 20–24 than among those aged 40–44 (19.7 vs. 17.9). There was no difference by education in age at first birth.

The overall total fertility rate (TFR) for the period 1984–1986 among women aged 15–44 was 6.7 lifetime births per woman. Urban women had a TFR of 6.1, almost one birth lower than the TFR among rural women (7.0); among women in Bamako, the TFR was 5.4. Only three percent of women 45–49 were childless, suggesting that at least three percent of Malian women are infecund.

At the time of the survey, 45 percent of married women were not exposed to the risk of pregnancy, because they were pregnant, were practicing postpartum abstinence or were experiencing postpartum amenorrhea. Although Malian women practice postpartum abstinence for only seven months, on average, the mean duration of postpartum amenorrhea is 15 months. The length of this period is principally attributable to the practice of prolonged breastfeeding, which lasts an average of 22 months. However, perhaps because urban women breastfeed for shorter periods than do their rural counterparts (20 months vs. 22 months), they experience a somewhat shorter period of postpartum amenorrhea and are exposed to the risk of pregnancy sooner than are rural women.

Contraceptive Knowledge and Use

Only 43 percent of currently married women have heard of at least one method of birth control; 29 percent have heard of a modern method and 37 percent have heard of a traditional method. Women under the age of 35 are only slightly more knowledgeable than are older women. On the other hand, urban women are almost twice as likely as rural women to be familiar with any method (68 percent vs. 35 percent), and are three times more likely to know of a modern method (57 percent vs. 19 percent). Among married women who know of a modern method, 22 percent have heard of the pill, 17 percent of injectables, 15 percent of the IUD, 14 percent of female sterilization and eight percent of the condom. Prolonged abstinence and _gris-gris_,* each familiar to 24 percent of currently married women, are the two best-known traditional methods. However, most of the knowledge revealed by the survey was elicited by probing. For example, only seven percent of women were able to spontaneously name the pill, and fewer than three percent of women could give any of the other modern methods without having been prompted.

Among Malian men, 65 percent have heard of at least one method, but only a small proportion (six percent or fewer) can spontaneously name a specific method. After prompting, the men are most likely to recognize the pill (38 percent); among other modern methods, more than three in 10 know of injectables (32 percent), female sterilization (32 percent) and the condom (31 percent), while the most widely known traditional methods are gris-gris, prolonged abstinence and periodic abstinence (33, 31 and 24 percent, respectively). Urban men are more likely than rural men to be familiar with at least one method (80 percent vs. 60 percent).

Contraceptive prevalence is very low in Mali: Fewer than five percent of married women and a similar proportion of all men report that they currently use a method of contraception (three percent use a traditional method and one percent a modern method). Nevertheless, urban women aged 15–29 are much more likely than comparable rural women to use any method (12 percent vs. two percent), with almost five percent of urban women using modern methods (principally the pill) and the rest relying on traditional methods (mainly periodic or prolonged abstinence). Educational level appears to have the greatest impact on current use: Three percent of young women with no schooling, 13 percent of those with a primary education and 53 percent of those with a secondary education are current users.

Among all married women, 32 percent say they want to wait at least two years until the birth of their next child, and 17 percent say they do not want any more children. Nevertheless, only 11 percent of women who are not practicing contraception say they intend to use contraceptives in the near future (21 percent of urban women and eight percent of rural women). Of the women who plan to use a method, the majority (70 percent) say they would choose modern methods, mainly the pill or injectables.

The principal reason given for contraceptive nonuse by women who do not want to get pregnant soon is lack of information about family planning. Among women who have heard of at least one method, 71 percent approve of family planning, with those aged 20–34, the urban and the educated most likely to approve of it. In contrast, only 17 percent of men approve of contraceptive use, with urban and educated men more likely than their rural and uneducated counterparts to do so. Interestingly, there is very little difference between people's own attitudes toward family planning and what they perceive to be the attitude of their spouse. For example, only 16 percent of the husbands sampled thought their wives approved of family planning, while 57 percent of the wives thought their husbands approved. Such erroneous perceptions are not surprising, however, since only eight percent of husbands and wives who were jointly interviewed said they had ever discussed family planning together.

Maternal and Child Health

Overall, only 31 percent of the women who had had a child in the five years preceding the survey had received prenatal care, with urban women much more likely than rural women (70 percent vs. 19 percent) and women with a primary education more likely than those with no schooling (59 percent vs. 27 percent) to have done so. Moreover, 64 percent of women who gave birth did so without the aid of medical personnel; of these, 30 percent used a traditional birth attendant, 21 percent were helped by a neighbor or relative and 13 percent received no assistance at all.

Despite declines in the last 15 years, levels of infant and child mortality remain very high in Mali: Between 1982 and 1987, the infant mortality rate was 108 deaths per 1,000 live births, and the child mortality rate was 249 deaths per 1,000 children under the age of five. About one out of every four Malian children aged 3–36 months experience chronic malnutrition. Further, the prevalence of diarrhea among children is high: In the two weeks preceding the survey, 34 percent of children under five had had an episode of diarrhea, but only one percent had been given oral rehydration therapy, and 32 percent had not received any treatment at all.

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*_Gris-gris_ are amulets worn by women in an attempt to prevent pregnancy.

Reference

1. B. Traore, M. Konate and C. Stanton, *Enquête Démographique et de Santé au Mali 1987*, Centre d'Etudes et de Recherches sur la Population pour le Developpement, Institut du Sahel, Bamako, and Institute for Resource Development/Westinghouse, Columbia, Md., 1989.

Moderate Fertility Rates And Levels of Method Use Mark Ecuador DHS Results

Forty-four percent of married Ecuadoran women practice family planning, but three-fifths of married women who do not want any more children either are not using a contraceptive method or are using an ineffective method. At current rates of childbearing, women will have borne just over four children by the end of their reproductive years, on average, one more than the family size they consider to be ideal. These are some of the major findings of the Encuesta Demográfica y de Salud Familiar carried out in Ecuador in 1987.[1]

The survey, which was part of the worldwide Demographic and Health Survey project, was based on a sample of 4,713 women aged 15–49. Of these women, eight percent had never had any schooling, 15 percent had not completed primary school, 33 percent had completed primary school and 45 percent had had at least some secondary education. Among the oldest women, 22 percent had never been to school, whereas among the youngest, this proportion was only three percent, indicating a considerable improvement in female education over the past 30 years. Fifty-nine percent of the women live in urban areas, with the remaining 41 percent in rural areas. The birthrate in Ecuador is estimated to be about 37 births per 1,000 population

DIGEST

(down from about 45 per 1,000 in the 1960s); that, combined with a death rate of about eight per 1,000 population, results in an annual growth rate of 2.8 percent.

Marriage and Fertility

The median age at marriage has remained virtually unchanged in Ecuador (at around 20) for the past 30 years, with some small variation by urban-rural residence and the woman's educational level. Only among women with a college education is there any marked tendency to delay marriage, however. These women do not marry until they are 25, on average.

At the time of the survey, 63 percent of women were currently married (42 percent in a legal and 21 percent in a consensual union), six percent were widowed, divorced or separated and 31 percent had never been married. Among the single women, only one percent of those surveyed were exposed to the risk of pregnancy. Among the currently married, 10 percent were pregnant, 14 percent were amenorrheic following a pregnancy, 15 percent were no longer fecund and 11 percent had not had sexual intercourse recently, leaving only 50 percent actually exposed to the risk of pregnancy.

The total fertility rate (TFR) for the five years preceding the survey is estimated to have been 4.3 lifetime births per woman, a reduction of 38 percent since the second half of the 1960s, when the TFR is estimated to have been 6.9. Women 30–39 experienced the greatest decline in their age-specific fertility and 45–49-year-olds the smallest. Among women in urban areas, the TFR is estimated to have been 3.5 lifetime births, while among rural women it was 5.5. The highest TFR is found among women with no schooling (6.4 births), and by far the lowest is among those with some college education (2.3 births).

In 1979, 57 percent of all childbearing was accounted for by women under 30. By 1987, this proportion had risen slightly to 60 percent, which suggests that Ecuadoran women are increasingly concentrating their childbearing into their earlier reproductive years.

Teenage childbearing in Ecuador seems to follow the pattern of other Latin American countries. Fourteen percent of all women 15–19 (and 67 percent of all married teenagers) have had at least one birth. The age-specific fertility rate among Ecuadoran women 15–19 for the five years preceding the 1987 survey (91 births per 1,000) is even higher than the rates found in Brazil (81 births per 1,000),[2] Colombia (78 per 1,000)[3] and Peru (83 per 1,000)[4] in 1986.

There is a clear relationship among Ecuadoran women between fertility and early age at entry into marriage or nonmarital union (both of which are considered "marriages" here). Among women married for at least 20 years, those who first entered into a union before age 20 have had 6.8 children, on average, compared with 5.4 among those who delayed entering into a union until later.

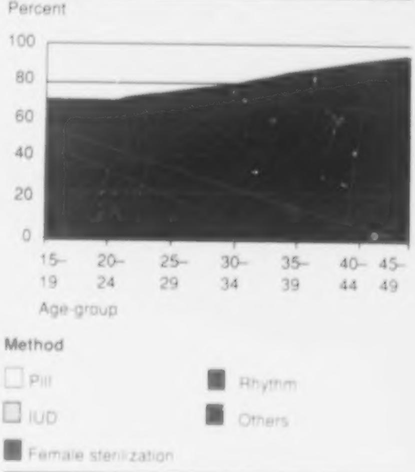
On average, women in Ecuador say they would ideally like to have three children. Among women who already have four children, 47 percent say they would ideally have wanted fewer, and among those with five children, 65 percent say their ideal would be a smaller family.

Family Planning Practice

Eighty-seven percent of women know of at least one modern method of birth control.* The most widely known method is the pill (81 percent), followed by the IUD (75 percent), female sterilization (74 percent), injectables (60 percent) and the condom (47 percent). However, the perception of problems associated with the use of these methods is widespread. Among women who know of the pill and the IUD, only 20 percent believe these methods to be trouble-free. A further 20 percent believe that each method creates health problems for the user, 30 percent say that the pill, but not the IUD, has side effects and 20 percent believe that the IUD has side effects but the pill does not. Furthermore, among those who know of condoms and other barrier methods, one woman in seven believes that such methods are not effective at preventing pregnancy. In contrast, while 42 percent who know of rhythm say that there are no problems associated with its practice, another 26 percent believe it is an ineffective method.

All women who knew of at least one method of contraception were asked where they would obtain contraceptives if they decided to use a method. One-third expected they would obtain their method from clinics and hospitals run by the Ministry of Health, while 27 percent would go to private doctors or clinics, 16 percent to the private family planning association and 12 percent to pharmacies. Just over half of the women said that if they were to be sterilized they would obtain the operation at a Ministry of Health facility. Forty-one percent said that they would purchase condoms commercially.

Figure 1. Percentage distribution of currently married women practicing contraception, by method used, according to age-group, Ecuador, 1987



Twenty-nine percent of all women 15–49 and 44 percent of married women were practicing family planning at the time of the survey. This rate among married women represents a slight increase from the prevalence level of 40 percent reported in 1982, all of which appears to be attributable to a rise in contraceptive practice among rural women from 27 percent to 33 percent between 1982 and 1987; no such increase was seen among urban women, 53 percent of whom were practicing contraception in both years.

The leading method of birth control in Ecuador is female sterilization, with 15 percent of married women relying on this method. It is followed by the IUD (10 percent), the pill (nine percent) and rhythm (six percent). As Figure 1 indicates, the pill and the IUD are the leading methods of birth control among younger married women; after age 30, however, sterilization assumes major importance, at the expense of reversible methods such as the pill and the IUD. Only reliance on rhythm remains at a relatively constant level at every age. A comparison of the results of the 1982 and 1987 surveys reveals a slight change in the method mix over time, with reliance on the IUD increasing over the period and use of the pill declining.

Six out of 10 married women in Ecuador have practiced contraception at some time in their lives. However, almost nine in 10 of these women did not begin to practice contraception until after the birth of their first child, and over one-third did not initiate use until they already had had three or more children. However, the analysis shows that younger women are starting to use a method at lower parities than did the preceding generation, and the practice of family planning in order to delay the first birth is increasing.

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*Male and female sterilization, the pill, the IUD, injectables, the condom, the diaphragm and spermicides.

Ecuadoran women are 31 years old, on average, when they opt for sterilization. Among women sterilized within the five years preceding the survey, the average age was 32, whereas the mean age at the time of the operation among women sterilized 12 or more years before was 28. The authors of the report point out that the women sterilized many years before had probably had more children at an earlier age than have more recently sterilized.

The unmet need for contraception appears to be considerable in Ecuador. Among married women who say they want no more children, 50 percent are not using any method of birth control and eight percent are using an ineffective method. However, it should be recalled that only half of married women are actually exposed to the risk of pregnancy; thus, realistically, the level of unmet need is probably actually a good deal lower.

Maternal and Child Health

The survey also examined some aspects of maternal and child health in Ecuador. The researchers estimate on the basis of their findings that the infant mortality rate for the period 1982–1986 was 58 deaths per 1,000 live births, a level substantially lower than the estimates of 72 per 1,000 in the late 1970s and of 97 per 1,000 in the early 1970s. In rural areas, the infant mortality rate was 64 deaths per 1,000 live births, while in urban areas it was 53 per 1,000. As might be expected, the rate is inversely related to a region's level of urbanization and to the mother's educational level. In Guayaquil, almost 68 percent of homes have piped drinking water, 57 percent have drainage systems and 99 percent have electricity; in the rural area of the Costa region, on the other hand, these proportions are 10 percent, two percent and 50 percent, respectively.

Levels of prenatal and maternity care are also lower in the country's less developed regions. Only 16 percent of urban women giving birth in the five years before the survey received no prenatal care, compared with 38 percent of rural women. Similarly, 82 percent of urban women were attended by a doctor or trained midwife at the time they gave birth, compared with only 37 percent of rural women.

Interviewers questioned women about their baby's health. They found that only 54 percent of urban mothers and 41 percent of rural mothers had taken their most recent child born in the past five years for well-baby care. Moreover, 56 percent of all children under five had suffered from a cough in the two weeks before the survey, and 39 percent had had a bout of diarrhea.

References

1. Centro de Estudios de Población y Paternidad Responsable, Instituto Nacional de Investigaciones Nutricionales y Médico Sociales and Demographic and Health Surveys, Institute for Resource Development/Westinghouse, *Ecuador: Encuesta Demográfica y de Salud Familiar*, Quito, 1988.

2. Sociedade Civil Bem-Estar Familiar no Brasil, Instituto para Desenvolvimento de Recursos, *Pesquisa Nacional Sobre Saúde Materno-Infantil e Planejamento Familiar (PNSMIPF) 1986*, Rio de Janeiro, 1987.

3. Corporación Centro Regional de Población, Ministerio de Salud and Demographic and Health Surveys, Institute for Resource Development/Westinghouse, *Encuesta de Prevalencia Demográfica y de Salud: 1986*, Bogotá, Mar. 1988.

4. Instituto Nacional de Estadística, Dirección General de Demografía, *Encuesta Demográfica y de Salud Familiar (ENDES 1986)*, Lima, Apr. 1988.

After Four Years, One in 100 Female Sterilizations Fail, Brazilian Study Concludes

Accidental pregnancy is relatively rare following sterilization, even a number of years later. A Brazilian study of women who underwent tubal occlusion found that 48 months after surgery, slightly more than one in 100 women had become pregnant. The probability of sterilization failure was significantly lower among older women, but was associated with no other personal characteristics of the women. Failure rates were lower among women whose sterilization was performed by a physician who averaged few such procedures per day, although the relationship was not statistically significant.*

Researchers in Rio de Janeiro conducted a study of 13,423 women who underwent sterilization between January 1, 1981, and December 31, 1984, in a clinic of the Centro de Pesquisas de Assistência Integrada à Mulher e à Criança (CPAIMC), a large umbrella organization of family planning groups in Brazil. Sterilization failure was measured by subsequent pregnancy; however, because there was no active follow-up of the women, only those pregnancies that the women reported to the clinic could be recorded as sterilization failures. A separate active follow-up of 15 percent of the women led the researchers to conclude that the percentage of failures not reported was likely quite low. Nonetheless, they caution that the rates they report should be viewed as low estimates. By June 30, 1985 (the cutoff date for the research), 144 women had reported a pregnancy. Of those, 22 were excluded from the analysis because it was determined that conception had occurred before surgery.

Using a life-table analysis, the investigators estimated cumulative failure rates at various points after sterilization. At six months, the estimated failure rate was 0.28 pregnancies per 100 sterilizations; the rate was 0.54 per 100 at 12 months, 0.87 at 24 months, 0.99 at 36 months and 1.04 at 48 months. Thus, the likelihood of sterilization failure doubled between one and four years after the procedure.

The investigators also used the life-table analysis to estimate failure rates at 12 and 24 months following surgery, according to age, parity, method of sterilization and technique of tubal occlusion. At both points, failure rates decreased with increasing age. None of the other variables showed a statistically significant association with sterilization failure.

Finally, the researchers applied a logistic regression analysis to isolate the effects of the woman's age at sterilization, whether the procedure was performed during a surgical training period, the average number of sterilizations the surgeon performed per day and the year the woman underwent sterilization. Age again showed a negative association with sterilization failure: At 12 months after surgery, the probability of failure among women aged 17–29 was 0.81 per 100 procedures, compared with 0.60 per 100 among those aged 30–34, 0.42 among 35–39-year-olds and 0.29 among those aged 40–51. At 24 months, the respective rates were 1.22, 0.89, 0.65 and 0.45 per 100 procedures. The researchers suggest that this association may be due to decreased fecundity among older women.

The results of the logistic regression analysis also revealed a relationship between the average number of sterilizations a surgeon performed daily and the risk of failure. Among patients of physicians who performed an average of 0–2 sterilizations per day, the probability of failure 24 months after surgery was 0.69 per 100, while among those who performed 7–15 procedures per day, the probability was 0.97 per 100. Although the difference was not statistically significant, the researchers believe that if the sample had been larger, the relationship would have been confirmed.

DIGEST

Tubal sterilization, the most prevalent contraceptive method in Brazil, is one of the most effective forms of contraception. However, the long-term risk of failure (about one percent after four years) must be acknowledged. The authors of the study point out that "potential acceptors of surgical sterilization have a somewhat different perspective from users of temporary methods, as they consider sterilization to be a definitive termination of their reproductive capability." Thus, it is important that those who consider undergoing female sterilization be made aware of the long-term risk of failure, not just the one-year or two-year failure rate. Such an understanding is particularly vital for women who need to avoid pregnancy for medical reasons.

Reference

1. K. J. Lassner et al., "Analysis of Sterilization Failure in Brazil," *International Journal of Gynecology and Obstetrics*, **27**:255, 1988.

Fertility, Infant Mortality Are Very High in World's Least Developed Nations

In the first half of the 1980s, the world's 41 least developed countries were growing at an average annual rate of 2.4 percent and had an average total fertility rate of 6.2 children per woman, an infant mortality rate of 133 deaths per 1,000 live births and a per capita gross national product of slightly over $200. Contraceptive use is low, but many governments have begun to support family planning activities to slow population growth or to promote birthspacing. These are some of the highlights of a report prepared by the Population Division of the United Nations on conditions in the least developed countries.[1]

In 1988, about 370 million people, or approximately seven percent of the world's total population, lived in 41 nations designated by the United Nations General Assembly as the least developed countries in the world. These countries are expected to account for about 12 percent of the world's population by the year 2025. Table 1, which lists selected demographic characteristics of these 41 countries, indicates that 27 are in Africa, nine are in Asia (including five in South Asia), one is in the Caribbean and four are in Oceania.

Between 1980 and 1985, the average annual rate of population growth among the 41 countries was 2.4 percent, down slightly from 2.5–2.6 percent in the 1970s. As the table shows, growth rates ranged from 1.0 percent in Samoa to 3.9 percent in Vanuatu, with 14 countries experiencing rates of three percent or more and seven having rates of less than two percent. Af-

Table 1. Selected demographic characteristics of the least developed countries, by region, 1988

Region and country	Total population (in 000s), 1985	Rate of population change (%), 1980–1985	TFR, 1980–1985	Contraceptive prevalence (%), 1987	Life expectancy at birth, 1980–1985	Infant mortality rate, 1980–1985
Africa						
Benin	4,050	3.0	7.0	9	44.0	120
Botswana	1,078	3.6	6.5	28	56.0	76
Burkina Faso	7,882	2.5	6.5	u	45.2	149
Burundi	4,721	2.8	6.4	9	46.5	124
Cape Verde	330	2.2	5.2	u	59.0	75
Central African Rep	2,576	2.3	5.9	u	43.0	142
Chad	5,018	2.3	5.9	u	43.0	143
Comoros	444	3.0	6.3	u	50.0	88
Djibouti	350	3.1	6.6	u	45.0	132
Equatorial Guinea	392	2.2	5.7	u	44.0	137
Ethiopia	42,271	1.7	6.0	u	40.0	159
Gambia	745	3.0	6.5	u	41.0	154
Guinea	6,075	2.3	6.2	u	40.2	159
Guinea-Bissau	889	1.9	5.4	u	43.0	143
Lesotho	1,538	2.8	5.8	5	53.4	111
Malawi	7,141	3.2	7.0	7	45.0	163
Mali	8,082	2.8	6.7	5	42.5	180
Mauritania	1,766	2.6	6.5	1	44.0	137
Niger	6,115	2.8	7.1	0	42.5	146
Rwanda	6,102	3.3	8.5	10	46.5	132
Sao Tome	97	2.7	u	u	u	u
Sierra Leone	3,665	2.3	6.5	u	39.0	166
Somalia	6,398	3.6	6.6	u	43.0	143
Sudan	21,818	3.1	6.6	5*	47.8	118
Togo	2,960	3.0	6.1	u	50.5	102
Uganda	15,491	3.3	6.9	u	49.0	112
United Rep. of Tanzania	22,751	3.7	7.1	u	51.0	115
Asia						
Afghanistan	14,519	-2.0	6.9	2	40.5	183
Bangladesh	101,147	2.7	6.2	25	48.6	128
Bhutan	1,362	1.8	5.5	u	45.9	139
Burma	37,544	2.1	4.6	u	57.5	80
Democratic Yemen	2,137	2.8	6.8	u	48.4	135
Laos	3,594	2.3	6.2	u	46.0	122
Maldives	183	3.3	u	u	u	u
Nepal	16,915	2.6	6.2	14	48.3	139
Yemen, North	6,888	2.8	7.1	1	48.4	130
Caribbean						
Haiti	5,922	1.8	5.0	7	52.7	128
Oceania						
Kiribati	64	1.6	u	u	u	u
Samoa	163	1.0	u	u	u	u
Tuvalu	8	1.6	u	u	u	u
Vanuatu	142	3.9	u	u	u	u
Least developed	371,335	2.4	6.2	u	47.1	133
Developing	3,680,188	2.1	4.2	45	57.6	89

*Refers only to North Sudan. Note: u=data unavailable.

ghanistan was the only least developed country to experience a negative growth rate during this period. Medium-variant projections (not shown) indicate that the overall rate of population increase in the least developed countries will rise from now until the late 1990s, when it will reach 2.9 percent annually; in the next century, the growth rate is expected to slow somewhat.

The governments of 22 of the 41 countries, including those of many of the most populous nations (such as Bangladesh and Ethiopia), consider their rates of population growth to be too high, and the governments of 16 of these countries are intervening to slow population growth. Only three of the countries—Bhutan, Equatorial Guinea and Laos—view their growth rates as being too low, and the remaining 16 consider their rates to be satisfactory.

The overall average life expectancy at birth for all 41 countries was 47 years in the first half of the 1980s, up from 44 years in 1970–1975. People living in Sierra Leone had the lowest life expectancy (39 years), while those living in Cape Verde had the highest (59 years). Throughout the remainder of the century, the least developed countries are expected to have a 10-year deficit in life expectancy compared with the other developing countries.

The overall infant mortality rate for the least developed countries averaged 133 deaths per 1,000 live births in 1980–1985, down from 146 per 1,000 in 1970–1975. By the end of the century, this rate is projected to decline by 24 percent, to 103 per 1,000. (In contrast, the infant mortality rate for the rest of the developing world is estimated to be 89 deaths per 1,000.) The governments of 38 of the 41 countries consider their infant mortality levels to be unacceptably high. Only Laos, Rwanda and Yemen perceive their mortality levels to be acceptable.

The gap in fertility levels between the least developed countries and the other developing nations is widening: Fertility levels in the other developing countries have declined steadily, from an overall total fertility rate (TFR) of 5.9 lifetime births per woman in 1965–1970 to one of 4.2 in 1980–1985, but the overall TFR in the least developed countries has remained at about 6.5 over the past two decades. As the table shows, in 1980–1985, the average TFR for all of the 41 countries was 6.2 births per woman, ranging from 4.6 in Burma to 8.5 in Rwanda. According to United Nations estimates, it will take more than 25 years for fertility levels in the least developed countries to reach levels similar to those found currently among the other developing nations.

The governments of 26 of the 41 nations (representing three-quarters of the total population living in the least developed countries) consider current fertility levels in their countries to be too high. Almost all of the other governments are satisfied with their fertility levels: The one exception is the government of Equatorial Guinea, which deems its TFR of 5.7 to be too low.

Owing to high levels of fertility and mortality, the least developed nations have a very young age distribution. In 1985, an estimated 45 percent of the population in these countries were children 14 or younger, 47 percent were between 15 and 60, and only eight percent were 60 or older. Consequently, more than half of the overall population were dependents (either 14 and younger or 60 and older). In 1985, there were 113 dependents for every 100 people in the working years, up considerably from a ratio of 102 per 100 in 1950.

Knowledge of contraceptive methods among women living in the 41 countries varies widely: At least half of all currently married women in eight of the 14 countries that have collected data on contraceptive use are familiar with some method. Contraceptive prevalence remains universally low: In most of the countries for which data are available, fewer than 10 percent of married women currently practice contraception, and in no country does current use rise as high as 30 percent. Further, many women in African countries who do practice contraception rely on the less effective methods.

Nevertheless, there is a growing trend among the governments of the least developed countries to support family planning activities to attain demographic objectives or to promote birthspacing. Many of the governments now support access to modern contraceptive methods: Thirty-three countries provide support directly through government-run clinics; five countries (Benin, Burma, Chad, Mauritania and Somalia) provide indirect support; two countries (Djibouti and Equatorial Guinea) do not limit access to family planning but do not provide any support for it; and only one country (Laos) restricts access to birth control methods.

According to the authors of the report, there is an urgent need to improve the quality and quantity of data for the least developed countries. Further, they point out that because acute poverty exists in combination with very high mortality, fertility and population growth in these countries, "the challenge is . . . to devise appropriate and effective population policies that will bring about more rapid social and economic development."

Reference

1. United Nations Population Division, "Concise Report on the Monitoring of World Population Trends and Policies, with Special Emphasis on the Population Situation in the Least Developed Countries," report to the Economic and Social Council, New York, Jan. 1989.

Salvadoran Women Begin Contraceptive Use Late, Rely Heavily on Sterilization

Before they start to practice family planning, Salvadoran women are 28 years old, have been married for eight years and already have 2.6 children, on average; in rural areas, they are 32 years old and have four children before initiating contraceptive use. Female sterilization, by far the leading method of fertility regulation in El Salvador, accounts for two-thirds of all contraceptive use. Because family planning is adopted late and is used to limit rather than space births, women still have 4.6 children, on average, and at present rates of childbearing and mortality, the nation's population will double in the next 25 years. These are some of the conclusions of the recent Family Health Survey (FHS), carried out in 1988 by the Asociación Demográfica Salvadoreña (ADS), with the technical assistance of the U.S. Centers for Disease Control (CDC).[1]

Three national fertility surveys have been conducted in El Salvador since 1978. The 1978 Contraceptive Prevalence Survey was based on a sample of 4,076 women aged 15–49.[2] The 1985 Demographic and Health Survey (DHS) was based on a similar group,[3] whereas the 1988 FHS used a sample of women 15–44. To make the results of the three surveys more comparable, the authors of the 1988 survey report excluded women aged 45–49 from the denominators of the 1978 and 1985 surveys. In addition, weighting factors were applied to the 1978 and 1985 data sets to compensate for the exclusion of households that were inaccessible in those years because of security problems. Thus, the 1985 data given here differ slightly from those previously published.

Marriage and Fertility

Marriage begins early in El Salvador. The singulate mean age at marriage was 19.8 in 1985 and 20.3 in 1988 (Table 1, page 78). In both years, 24 percent of 15–19-year-olds were in union at the time of the survey. Consensual union is the more common form of marriage: In 1988, 58 percent of all currently married women 15–44 were in a consensual union, and among teenagers, this proportion was 82 percent. Marital breakdown is also common, with about one in seven of all women aged 25–39 having been divorced or separated.

In 1978, the total fertility rate (TFR) was 6.3 lifetime births per woman. The TFR in the year before the 1985 DHS survey was substantially lower (4.5 births per woman), and the rate varied widely by region—3.3 in metropolitan San Salvador and 5.8 in rural areas. Three years later, the TFR was estimated to be 4.6 (3.1 births per woman in the capital region and 5.9 in rural areas). Thus, the fertility decline in El Salvador appears to have stalled.

Of course, the TFR is a synthetic estimate, measuring the hypothetical number of children that Salvadoran women will have if they pass through their reproductive years conforming to the current age-specific fertility rates of each age-group. Salvadoran women aged 40–44 in 1988 (women who had probably completed their childbearing) had had 5.9 children (7.4 in rural areas). These numbers show why the population is still growing at a rate of 2.8 percent per year. The authors of the 1988 survey report conclude that if "fertility and death rates were to remain constant, El Salvador's 1988 population of 5.4 million would double in about 25 years."

Contraceptive Use

In 1978, 34 percent of married women were using a contraceptive method. The leading methods at that time were sterilization (18 percent) and the pill (nine percent). In 1985, contraceptive prevalence was 46 percent among married women 15–44, with two-thirds of contraceptive practice accounted for by female sterilization. By 1988, overall prevalence was only slightly higher, at 47 percent (an increase that is within sampling error), and 63 percent of these users had been contraceptively sterilized. Thus, the authors conclude that between 1985 and 1988, there was no significant increase in contraceptive use in El Salvador. The only other method relied upon by a substantial number of women in El Salvador is the pill, used by seven percent of currently married users in 1985 and by almost eight percent in 1988. Up to age 24, the pill is the leading method among married users, whereas after that age, the preferred method is sterilization.

Table 1. Selected data from the 1985 Demographic and Health Survey (DHS) and the 1988 Family Health Survey (FHS), El Salvador

Measure	DHS (1985)	FHS (1988)
Mean age at first union	19.8	20.3
% of women 15–19 in union	24.0	23.5
Total fertility rate	4.5	4.6
% of married women practicing contraception	46.3	47.1
% sterilized	30.8	29.6
Duration of breastfeeding (in mos.)	16.0	17.0
Infant mortality rate (per 1,000 live births)	65.0	50.0

In the 1988 survey, when the women who were practicing contraception were asked why they were doing so, 72 percent said they did not want any more children, while only 28 percent said they wanted to space births. (The latter proportion was so low presumably because most users were relying on sterilization.) Women under 25, those with only one child, those with 10 or more years of schooling and those using reversible methods, however, gave spacing as the main reason they used a method.

Women are 28 years of age, on average, when they first use a birth control method (having probably been married for about eight years), and they already have a mean of 2.6 children. Rural women, on the other hand, do not practice family planning for the first time until they reach age 32 and already have four children. The mean age at sterilization is 27.4 among married women, and 30 percent of those sterilized have the operation before they are 25 years old. Sterilized women have 3.5 living children, on average, at the time of the operation.

Eighteen percent of nonpregnant, fertile women were not using contraceptives but did not want to be pregnant (the definition of need for family planning services). Using the same criteria, levels of unmet need are highest among married women (30 percent), rural women (28 percent), those with no schooling (30 percent) and those with five or more children (over 32 percent). The total level of unmet need is relatively low because the proportion of fecund married women who are currently breastfeeding or pregnant is relatively high.

Maternal and Child Health

Breastfeeding is nearly universal in El Salvador, with 95 percent of women who had had a child in the two years preceding the 1988 survey reporting that they had breastfed that baby. The mean duration of breastfeeding during that period was 17 months, one month longer than the average duration reported in 1985. On average, women begin giving their babies solid food after about five months and other milk at about 10 months. As is typical in Latin America, the duration of breastfeeding is lowest among the most highly educated; however, between 1985 and 1988, the greatest increase in breastfeeding duration occurred among these women.

In 1985, the infant mortality rate was estimated to be 65 deaths per 1,000 live births. In 1988, the probability of dying in infancy was 50 per 1,000. Between 1985 and 1988, most of the decline in mortality occurred in rural areas, where the rate fell from 81 to 56 deaths per 1,000 live births.

Levels of immunization among young children appear to have remained relatively unchanged between 1985 and 1988. Slightly more children under five received their complete tuberculosis shots in 1988 than in 1985, but the proportion receiving complete vaccinations against polio, diphtheria, tetanus, pertussis and measles declined slightly, especially in urban areas.

Diarrheal infections are still prevalent among young children and babies in El Salvador. In 1988, 29 percent of children under five (and 33 percent of those in rural areas) had suffered from diarrhea during the two weeks before the interview. The authors of the survey report point out that acute diarrhea—a clinical symptom caused by viral, bacterial or parasitic infection—can be spread through fecal contamination of water or food, and is "usually associated with inadequate food handling, inadequate personal hygiene and poor environmental sanitation." Almost nine in 10 recent cases of diarrhea had been treated; however, only 13 percent had been treated with oral rehydration solutions, while nearly 81 percent were treated with popular pharmaceutical preparations and five percent with traditional medications. The researchers comment that it is likely that the "majority of these treatments were either ineffective or deleterious."

References

1. Division of Reproductive Health, Centers for Disease Control and Asociación Demográfica Salvadoreña (ADS), *El Salvador: 1988 Family Health Survey*, Atlanta, Feb. 1989.

2. ADS, *Encuesta Nacional de Fecundidad, Planificación Familiar y Comunicación Masiva, El Salvador, 1978: Resultados Generales*, San Salvador, 1980.

3. ADS and Demographic and Health Surveys, Institute for Resource Development/Westinghouse, *El Salvador: Encuesta Nacional de Salud Familiar (FESAL-85)*, Columbia, Md., Sept. 1987.

Books in Review

The State of a Continent: Demography in Africa

The State of African Demography

ed. by Etienne van de Walle, Mpembele D. Sala-Diakanda and Patrick O. Ohadike, International Union for the Scientific Study of Population (IUSSP), Liège, 1988, $12.00 ($10.00 IUSSP members), 155 pp.

Reviewed by John C. Caldwell

This very useful collection of essays, available in both English and French, is a credit to its publisher, the International Union for the Scientific Study of Population (IUSSP). The essays focus mainly on Sub-Saharan Africa, a region the editors are well-positioned to review: Etienne van de Walle's program at the Population Studies Center of the University of Pennsylvania is concerned with Tropical Africa; Mpembele Sala-Diakanda heads the francophone United Nations demographic center for the region, Institut de Formation et de Recherche Démographiques; and Patrick Ohadike directs the anglophone United Nations center, Regional Institute of Population Studies. The result of their collaboration, *The State of African Demography*, is straightforward and clear, and would make an excellent textbook.

An appropriate place to begin this review is with the chapters on mortality, given the current claims in the press, with backing from the United Nations Children's Fund (UNICEF), that report a major upturn in infant and child mortality in Africa (related to, among other factors, famine and the economic backlash from large national debts). The studies in this volume, however, contain no evidence that supports such trends.

Althea and Kenneth Hill, for example, emphasize that, even though the extreme unreliability of data makes certainty impossible, all evidence up to 1985 has pointed to declining mortality in every major African region over the last few decades. From the late 1960s through the early 1980s, each year increases in life expectancy for the continent as a whole averaged 0.43 years, and increases in Sub-Saharan Africa were even slightly higher. This pattern is similar to that found for both the population in the developing countries and the population worldwide. The decline in mortality in Africa was achieved over precisely the period when the rains dried up and economic difficulties intensified. Yet it is also true that by the mid-1980s life expectancy on the continent was still no more than 50 years, and if the decline in mortality were to continue at the present pace, it would not reach a satisfactory level of 70 years before the year 2030. However, the most positive aspect of current trends is that declines have been greatest in the highest mortality areas, so that West Africa's rates of mortality are no longer uniformly higher than those of East Africa. The Hills present evidence that the withdrawal of governments from the health sector bottomed out around 1980, and that, subsequently, the proportion of government resources invested in the health sector has begun to rise again.

Douglas Ewbank takes up the theme of health policy in the following chapter. Although he details clearly what should be done, he fails to come to grips with the problem of why it is so often not done.

Allan Hill does a better job in his chapter on famine. It is now clear that rainfall in Africa has been lower over the last 25 years than at any other time during this century (although the 1920s almost compete with the present, and the 1940s were also dry times). In this chapter, the present is starkly contrasted with the wet years of the 1950s, when the continent had the best rainfall in this century. Nevertheless, as Hill emphasizes with a useful map, famine has also been the product of warfare and internal disorder; hunger has both a political dimension and a meteorological one. Hill's research group in Mali found no evidence of the rise of childhood mortality during the Sahelian drought of the early 1970s, but it may be that the unreliability of African age data and the weakness of retrospective reporting make a definite conclusion impossible.

Trends in child mortality in Africa will certainly influence trends in family planning, which are treated in the opening chapters of this volume. In one, Thérèse Locoh writes on the Sub-Saharan African family. She starts with an observation that census data and other official statistics are usually not only inadequate but misleading. Nevertheless, she does attempt to examine trends in the makeup of the African family, but is at her best in her social asides. At times she seems to believe that North Africa and other Third World societies are merely Sub-Saharan Africa at a later stage of development, but this does not prevent her from being sensitive and perceptive about the region. She points out that premarital conceptions and births have usually been welcome; this norm has only recently been challenged by young women's desires to continue their education and training. In any case, entry into marriage has traditionally been a process, rather than an event. High, sustained fertility, not virtue through confining births to marriage, continues to confer status in the region.

Society in Sub-Saharan Africa is characterized by early age at marriage among young women, a large age gap between spouses, and a high incidence of polygyny and marital instability. The volume offers little statistical certainty of persistent changes in any of these characteristics. There is some evidence, however, of an increase in female-headed households,

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which now stand at almost 30 percent in Ghana and Zambia (perhaps an indication of a greater matriarchal focus to families in urban areas). Locoh discusses the finding that child fostering has not declined with increasing education or urbanization. Her analysis shows an understanding of the African viewpoint: "The children that are exchanged for various lengths of time are the true messengers of family solidarity, and they keep alive the links between distant kin" [p. 55]. Although Locoh concedes that fathers suffer little financial strain from high fertility because of their limited economic responsibility, she believes that fertility could fall because of gradual family changes, especially a strengthening of the emotional and economic tie between spouses resulting from the influence of Christianity, or because of the more rapid family changes caused by AIDS. Fertility is also likely to decline once urban women begin making their own family planning decisions.

In a related chapter on fertility and family planning, Hilary Page comes to much the same conclusions from a more theoretical stance. She demonstrates that there is no evidence of fertility decline in any of the countries in continental Sub-Saharan Africa, with the possible exception of Zimbabwe, and even this assumption is challenged. She presents an interesting analysis of the impact of proximate determinants on fertility but places too much emphasis on marriage. In terms of the likelihood of fertility decline, she sees some hope that the husband's complete authority over reproductive decisions will be eroded with a phasing out of payments by the prospective husband to the bride's family, in spite of little evidence of any correlation. She also sees potential for decline in the relationship between increasing female economic responsibility and reproductive decision-making in parts of Kenya, as demonstrated by C. Safilios-Rothschild and E.K. Mburugu,[1] although their finding has yet to be replicated in any other setting.

Three other good chapters are also worth mentioning. Aderanti Adepoju reports on the region's migration patterns and stresses that migration is usually a family decision, not an individual one. He discusses the failure of Mozambique and Tanzania to persuade rural populations who have emigrated to the cities to return to the countryside, and points out that whatever may be said of Tanzania's efforts in the 1970s, its program was the only major initiative on the continent that attempted to put real resources into rural areas.

K.T. de Graft-Johnson presents a masterly summary of censuses and surveys, as well as the organizational effort that has gone into persuading most countries in the region to participate in the decennial census rounds. He points out that data quality did not improve significantly between the 1970 and 1980 rounds and that a complete vital registration system still does not exist in continental Sub-Saharan Africa.

Dominique Tabutin contributes a comprehensive chapter on African training in demography, which he concludes is "coming of age." Somewhat surprisingly, he claims that "in most countries demographic training is given at the graduate level" [p. 142]. Although programs exist in at least one university in every country and in 10 or more universities in Nigeria, the truth is that, at least in the English-speaking countries, the great majority of teaching in demography is at the undergraduate level. Tabutin puts in a plea for the concentration of demography programs in a few good universities, but this has proved impossible, even within the borders of Nigeria.

The IUSSP, the editors and the authors are to be congratulated for assembling a valuable update on the state of African demography. Sadly, these essays also fully support Hilary Page's conclusion that "it is still too early to predict with any accuracy the date at which substantial and sustained fertility declines will become apparent" [p. 43].

Reference

1. C. Safilios-Rothschild and E.K. Mburugu, "Rural Women's Income and Fertility in Kenya," paper presented at the Workshop on Women's Status and Fertility organized by the Rockefeller Foundation at Mount Kisco, N.Y., July 1986.

Changing Patterns of Fertility . . .

(Continued from page 57)

1.4 millones, y el de condones, de 715 millones a prácticamente 2.000 millones. La demanda de anticonceptivos ha de subir también en América Latina, pero no tanto como en otras regiones.

Según cierta proyección, simplemente para mantener el nivel actual de asistencia, el Agencia para el Desarrollo Internacional de los EE.UU. deberá aumentar sus suministros de píldoras al Africa en más de un 300 por ciento. En cuanto a condones, el Agencia tendrá que acrecentar sus entregas al Africa en más del 200 por ciento, al Asia en alrededor del 170 por ciento y a América Latina en casi un 100 por ciento. En el caso del DIU y debido a un aparente exceso de abastecimiento, se espera un menor aumento de la demanda. Entre las consecuencias de estas conclusiones figuran la necesidad de efectuar proyecciones realistas del aumento de anticonceptivos para cada país y la de planificar la forma como el Agencia, otros donantes y los propios países en desarrollo han de sufragar los mayores costos.

Résumé

L'augmentation de la pratique de la planification familiale et des couples en âge de procréer va grandement accroître la demande de moyens anticonceptionnels dans le Tiers monde. On estime que la plus forte augmentation de la prévalence contraceptive se produira en Afrique, où, afin que ce continent puisse maintenir la ventilation actuelle des méthodes et atteindre l'indice synthétique de fécondité moyen estimé par les Nations unies, l'approvisionnement de pilules devra passer de 47 millions de cycles en 1985 à 199 millions pour l'an 2000. En Asie, l'utilisation du stérilet durant cette même période passera de 286 000 unités à presque 1.4 million, et celle des préservatifs passera de 715 millions à pratiquement 2.000 millions. La demande de moyens contraceptifs s'accroîtra aussi en Amérique latine, mais elle sera moindre que dans les autres régions.

Selon certaines prévisions, simplement pour maintenir la même partie de la demande en l'an 2000 qu'en 1985, l'Organisme pour le développement international des Etats-Unis (AID) devra augmenter son approvisionnement de pilules de plus de 300 pour cent. Quant aux préservatifs, l'AID devra accroître son approvisionnement en Afrique de plus de 200 pour cent, en Asie d'environ 170 pour cent et en Amérique latine de presque 100 pour cent. Quant au stérilet, dû à un sur-approvisionnement du dispositif, on espère que l'accroissement de la demande sera moindre. Parmi les implications de ces résultats, figurent la nécessité d'effectuer des projections réalistes de l'augmentation des produits contraceptifs pour chaque pays et celle de planifier la façon dont l'AID, les autres donateurs et les pays en voie de développement eux-mêmes puissent subvenir aux frais qui vont se multiplier.

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Volume 15, Number 3, September 1989

Family Planning in a Peruvian Context
Gandhi on Improving India's Program

Male Attitudes in Burkina Faso

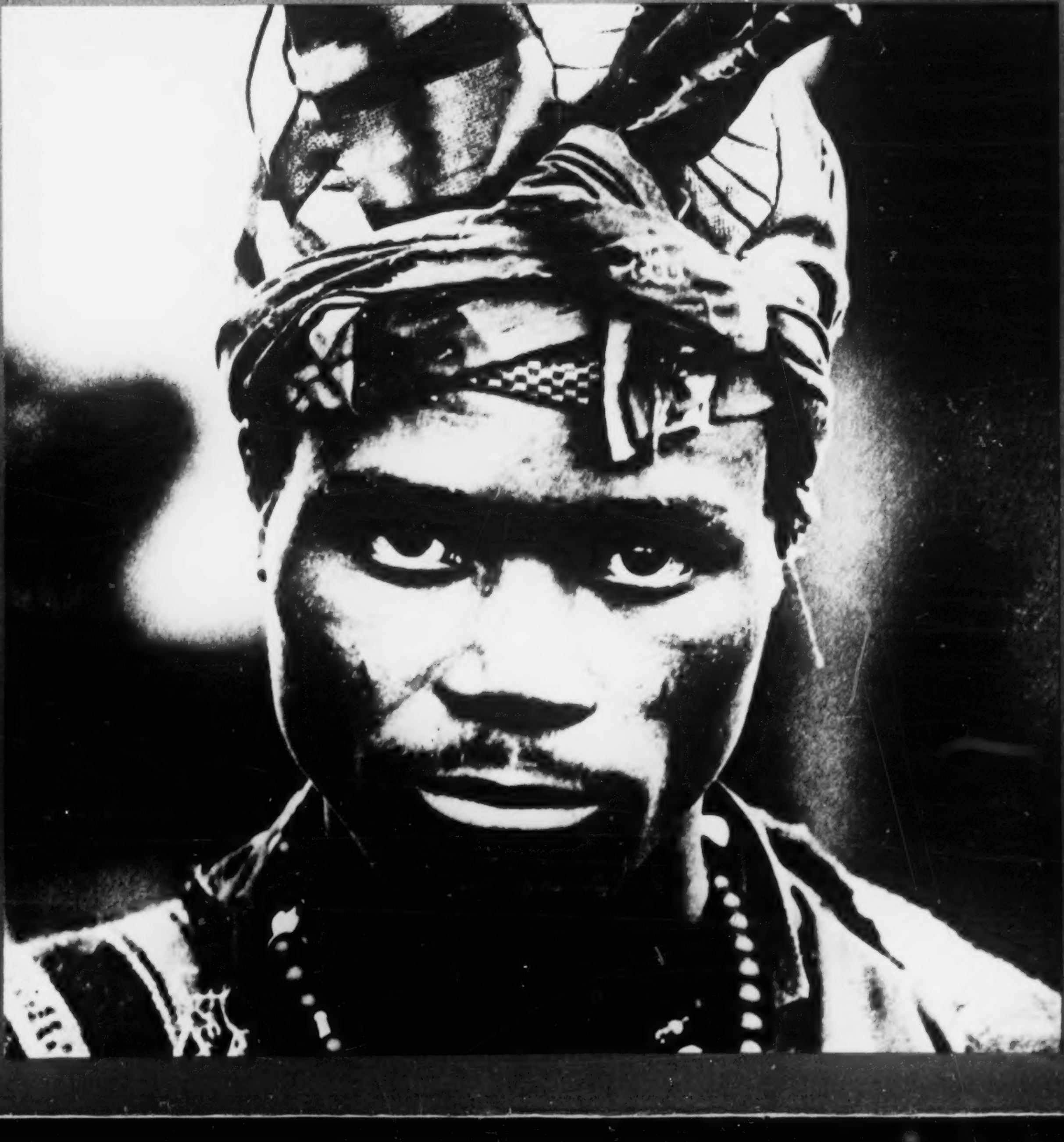

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Table of Contents **Page**

Update 82

Articles

Male Knowledge, Use and Attitudes Regarding Family Planning In Burkina Faso — Therese McGinn, Azara Bamba and Moise Balma 84

Investigating the Social Context Of Fertility and Family Planning: A Qualitative Study in Peru — Alfredo L. Fort 88

Special Report

The MEXFAM Community Doctors Project: An Innovative Service Delivery Strategy — Humberto Arango 96

Comment

Women's Status, Education And Family Formation In Sub-Saharan Africa — Mary M. Kritz and Douglas T. Gurak 100

Document

Gandhi Addresses the World on Family Planning 106

Digest

Underdevelopment, Not Islam, Key to High Fertility in Muslim Nations 108
In Morocco, Fertility Is Declining and Method Use Rising, DHS Finds 109
Breastfeeding Has Increased Among Urban Women in Indonesia 111
Bangladeshi Midwives Need Training to Counter Dangerous Birthing Practices 112
Sri Lanka Family Size Declines; Estates Show Greatest Health Needs 113
Long-Term Pill Users Shown to Be at Higher Risk of Breast Cancer 115
Human Papillomavirus Is Linked to Cervical Cancer in Latin America 117
One-Third of Infants Born to HIV-Positive Mothers Face Illness or Death 117

Books in Review

A Guide Through The Population Jungle — Walter Mertens 119

Note to Authors 121

UPDATE

HIV in One African Hospital

Since the identification of the first case of AIDS in Malawi in 1985, the number of men and women diagnosed as being infected with the human immunodeficiency virus (HIV) has risen steadily. A study at Zomba General Hospital, a 300-bed facility in Malawi,[1] finds that over a two-year period, 352 cases of HIV infection were diagnosed. The number of cases identified each month has climbed steadily since 1986, when regular serologic testing of suspected cases of infection began: From September through December of that year, fewer than five cases were seen each month; in contrast, from August through October 1988, at least 30 cases were identified each month. The infected individuals were about equally divided by sex—171 men and 181 women. The men were 31 years of age, on average, while the mean age of the women was 24. About one-third of those infected had been admitted because of tuberculosis, while one in six had symptoms of severe wasting (known as "slim disease"), such as chronic diarrhea and weight loss. The investigator concludes that if the number of cases continues to increase, the effects of HIV infection will soon be the most common cause of hospital admission for adults in Malawi.

[1] P. A. Reeve, "HIV Infection in Patients Admitted to a General Hospital in Malawi," *British Medical Journal*, **298:**1567, 1989.

Curing Diarrhea Won't Stop Malnutrition

Programs to control childhood diarrhea save lives, Bangladeshi researchers find, but they cannot be expected to have a substantial impact on the degree of malnutrition found among children.[1] While the young children studied tended to lag in growth during episodes of diarrhea, they generally made up the difference with slightly faster growth later. On the other hand, all of the children, regardless of whether or not they had had diarrhea, gained weight at only three-quarters of the ideal rate. The investigators conclude that "efforts to control or treat diarrhea should not be expected to reduce the prevalence of malnutrition. . . . In poor communities, children are malnourished mainly because they do not get enough food, . . . not because they suffer from diarrhea."

[1] A. Briend et al., "Are Diarrhoea Control Programmes Likely to Reduce Childhood Malnutrition? Observations from Rural Bangladesh," *Lancet*, **II:**319, 1989.

Assembly-Line Sterilization

One Indian physician has, in the course of 10 years, performed 250,136 laparoscopic sterilizations. Reporting on his experience in the *British Journal of Obstetrics and Gynaecology*, Pravin V. Mehta describes having sterilized 40–50 women per hour in special sterilization camps, with high levels of effectiveness (a failure rate of 0.1 percent) and low levels of associated mortality (4.8 deaths per 100,000 procedures).[1] Furthermore, rates of reported surgical and postoperative complications were no greater than those in other large studies of female sterilization. The physician concludes that since demand for sterilization in India far exceeds the ability of physicians to perform the operation, more doctors ought to study his approach. A British family planning expert, John Guillebaud, who observed Mehta's technique, comments that "if the main criteria of success of a mass sterilization program are safety, efficacy and cost-effectiveness, then Dr. Mehta and his team are to be congratulated."[2] However, he notes several reservations, the greatest being the "apparent paucity of counseling, lack of a human touch during the surgery and the risk of cross-infection." Nonetheless, he concludes that although the above deficiencies are important, they can easily be remedied.

[1] P. V. Mehta, "A Total of 250,136 Laparoscopic Sterilizations by a Single Operator," *British Journal of Obstetrics and Gynaecology*, **96:**1024, 1989.

[2] J. Guillebaud, "Mass Laparoscopic Sterilizations," *British Journal of Obstetrics and Gynaecology*, **96:**1019, 1989.

Infectious Cervical Cancer

The hypothesized link between genital infection and cancer of the cervix, as well as the potential of barrier methods for preventing cervical cancer, has received further support from a U.S. case-control study involving nearly 800 women.[1] Women who had had 10 or more sexual partners were nine times more likely to have been diagnosed with carcinoma in situ or invasive cervical cancer than were those with one or no sexual partner, as were women whose regular partner had had 10 or more sexual partners. Women with a history of herpes infection were three times more likely to have had cervical cancer. On the other hand, women who relied on spermicides as their contraceptive method were almost 60 percent less likely to have had cervical cancer. Among women who had had more than one sexual partner, condom users were half as likely and diaphragm users one-third less likely to have had cervical cancer.

[1] M. L. Slattery et al., "Sexual Activity, Contraception, Genital Infections, and Cervical Cancer: Support for a Sexually Transmitted Disease Hypothesis," *American Journal of Epidemiology*, **130:**248, 1989.

Health Care in Rural India

The credibility of government health services in rural India is "fairly low," according to a case study conducted in a small village in rural Uttar Pradesh, in northern India.[1] The researchers who conducted the study found that the nearest primary health center (about 2.5 km from the village) was in poor physical condition and was rarely open during its posted hours; as a result, most villagers refused to go to the center. A civil dispensary located in the village itself was also dilapidated and lacked supplies: The male medical officer who ran the dispensary said that he could no longer give out condoms because the expiration date had passed and he had never received a new supply. A health subcenter staffed by a trained nurse and a traditional birth attendant and established in the village six months before was hardly ever open, and the nurse was said to have charged village women for assisting during delivery, even though her services were supposed to be free of charge. The only health care providers readily available to the villagers were untrained private practitioners who used herbs and traditional medicines. Ironically, they appear to have been so successful at treating minor ailments, the investigators argue, that their services are probably more cost-effective than those provided at government facilities. The evaluators suggest that the Indian government consider training these private practitioners to dispense contraceptives and provide other simple kinds of health care.

[1] M. E. Khan, R. Anker and S. K. Ghosh Dastidar, "Access to Health and Family Planning Services in Rural Uttar Pradesh: A Micro-Level Evaluation," *Journal of Family Welfare*, Vol. 35, No. 3, Mar. 1989, p. 3.

Risk Factors for AIDS

Among Kenyan men who had contracted a sexually transmitted disease (STD) from a prostitute, those who were not circumcised were eight times more likely to have developed HIV infection than were circumcised men, according to a study of partners of infected Nairobi prostitutes.[1] Overall, 17 percent of 422 men who were treated for an STD after having visited one of about 1,000 Nairobi prostitutes being studied by health authorities developed HIV infection. (At the time, 85 percent of the prostitutes whom they had visited were infected with HIV.) Besides circumcision status, two other factors had a great impact on the chance that the men would be infected with HIV: Those with genital ulcers were almost five times more likely to have developed an HIV infection than were those without such ulcers, and those who said they regularly visited prostitutes were three times more likely to be infected with HIV than were men who had been to a prostitute only once. Further analysis confirmed the importance of circumcision and genital ulcers: Only about three percent of circumcised men with no genital ulcers developed antibodies to HIV (an indication of infection), compared with 24 percent of uncircumcised men with no genital ulcers and 53 percent of uncircumcised men with genital ulcers. The investigators suggest that besides educating people to avoid having intercourse with those likely to be infected with HIV and promoting the use of barrier methods of contraception, lowering the prevalence of genital ulcers in Africa could help to reduce the rate of HIV infection.

[1] D. W. Cameron et al., "Female to Male Transmission of Human Immunodeficiency Virus Type 1: Risk Factors for Seroconversion in Men," *Lancet*, II:403, 1989.

Sisterhood Is Powerful

The first field test of a new indirect method of estimating maternal mortality in a population-based survey proved very successful, raising hope that rates of maternal death can be determined with far greater accuracy than is now possible.[1] The technique, called the "sisterhood method," involves asking survey respondents about their siblings and determining how many of their female siblings have died, and under what circumstances. The proportion of adult sisters who have died during pregnancy, childbirth or the immediate postnatal period can then be used to calculate an overall maternal mortality rate for the region. When the method was tested in six Gambian villages, investigators calculated a maternal mortality rate there of 1,005 maternal deaths per 100,000 live births. This estimate was very similar to the rate derived from a 25-year longitudinal study carried out in the Gambia starting in 1951. Thus, a technique that can use data collected in a single survey may provide estimates comparable to those derived from a much more expensive, long-term study.

[1] W. Graham, W. Brass and R. W. Snow, "Estimating Maternal Mortality: The Sisterhood Method," *Studies in Family Planning*, 20:125, 1989.

AIDS Fear and Knowledge in Botswana

The vast majority of citizens in Botswana are afraid of AIDS, according to a series of surveys conducted in that country, but some groups appear less willing than others to change their behavior to lessen their risk of HIV infection.[1] Samples of more than 1,500 citizens and over 300 students were asked a series of questions about AIDS. Anywhere from 83 to 87 percent said that they feared AIDS. However, 75 percent of students and 67 percent of literate nonstudents said that they were "doing something" to avoid infection, compared with only 36 percent of illiterate respondents; the proportions who said they had changed their own sexual habits ranged from 58 percent of literate nonstudents to 38 percent of illiterate respondents. Condom use was more common among students and literate nonstudents than among illiterate respondents. The researchers conclude that government educational campaigns have clearly been successful in making Botswanan men and women more aware of AIDS, but they have not convinced enough people to take measures to reduce their risk of contracting HIV infection.

[1] G. Ahmed and G. N. Shastri, "People's Fear of Catching AIDS in Botswana—What They Are Doing to Prevent It in Society," paper presented at the biennial meeting of the International Union for the Scientific Study of Population, New Delhi, India, Sept. 20–27, 1989.

Calcutta Success Story

A large-scale outreach program established in 1986 has made remarkable progress in promoting contraceptive use and child immunization in the slums of Calcutta. A World Bank evaluation notes that two years after the program was established, 39 percent of women of reproductive age in the area were using modern contraceptives, and 50–65 percent of children were immunized against various diseases.[1] The evaluation attributes the program's success to a number of factors: Fieldworkers' duties are limited to what is reasonable and feasible, and worker-client ratios are kept low; furthermore, fieldworkers are recruited from among the slum-dwellers themselves, an essential strategy if local residents' skepticism and suspicion are to be overcome. The development of defined work routines, the provision of in-service training and the assignment of reasonably few workers to each supervisor were also important factors in the program's success. The evaluation concludes that if such a program is to be duplicated successfully elsewhere, those implementing it should keep in mind that "the interests of the poor may best be served by a lowering of policymakers' and program implementers' sights toward the daily realities of work in villages and slums, and the specific detail of designing [practical] jobs and providing adequate support for fieldworkers and community volunteers."

[1] R. Heaver, *Improving Family Planning, Health and Nutrition Outreach in India: Experience from Some World Bank-Assisted Programs*, World Bank Discussion Paper No. 59, Washington, D.C., 1989.

Male Knowledge, Use and Attitudes Regarding Family Planning in Burkina Faso

"The men thought that women were largely ignorant of family planning, generally opposed to it and in need of education. In focus groups with women conducted as part of the same project, the women said the same thing about men."

By Therese McGinn, Azara Bamba and Moise Balma

Summary

A Knowledge, Attitudes and Practices survey of 603 men in Ouagadougou, the capital of Burkina Faso, revealed that 75 percent of men knew of at least one modern contraceptive method if they were prompted with a brief description of the method, and 90 percent recognized at least one modern or traditional method. Twenty-five percent of men could cite at least one modern or traditional method without any prompting. Nearly 19 percent of the men had used a modern method, mainly condoms, at some time; however, condom use appeared to be more closely associated with prostitutes and disease prevention than with birth control. Among nonusers, 64 percent said they might use a modern method in the future.

One in four of the respondents with children stated that they wanted no more, and this proportion increased as the number of children increased. The desired family size was surprisingly low, at around four for those who did not yet have four children. Eighty percent of men said they wanted more information about family planning, and 76 percent said they wanted this information for their wives. Of the 124 men who gave reasons for not wanting to use family planning, 31 percent said that it was bad for the health and 12 percent said that it was against their religion, but most cited personal reasons. Although attitudes toward family planning were, in general, very positive among men who participated in four focus groups, it was evident that many of them were misinformed about contraception. Many men expressed fears about the safety and permanence of modern methods. In addition, some men perceived that contraceptive use by women would threaten their fidelity in marriage.

Introduction

A common assumption regarding traditional or modernizing societies is that men have little good to say about family planning. This assumption is perhaps most strongly held about men in Africa, where patriarchy has a long history and families have traditionally been very large. Yet, unfortunately, there is little data available either to support or refute this contention: Most of the research investigates women's views and behaviors regarding family planning.

However, some studies have been conducted on men's knowledge, attitudes and use of family planning in Sub-Saharan Africa. A qualitative study in 1984 of 25 men in Bobo-Dioulasso, Burkina Faso's second largest city, revealed high levels of knowledge of modern contraceptive methods but also showed considerable opposition to their use among Muslims on religious grounds.[1] In contrast, a 1982 survey of men in Khartoum, Sudan, showed strong positive attitudes toward family planning: Three-fifths of respondents whose wives were of childbearing age said they wished to use family planning services, although few were actually using a method.[2] Similarly, a study in the Danfa region of Ghana in the mid-1970s showed that 67 percent of rural men approved of family planning and 70 percent knew of at least one modern method.[3]

Other studies in Nigeria and Kenya[4] further support the observation that men's attitudes toward family planning are more positive than is often assumed. However, these data also suggest that, while men's knowledge of contraceptive methods is quite widespread, contraceptive use remains uncommon. This situation is attributed to social and cultural factors as well as to the general scarcity of affordable, accessible and high-quality family planning services.

This article summarizes findings from a Knowledge, Attitudes and Practices (KAP) survey and four focus-group discussions on family planning conducted among males in Ouagadougou, the capital city of Burkina Faso. Burkina Faso has one of the world's lowest per capita incomes—$150 in 1986.[5] Ouagadougou is the country's largest city, with a population of 442,223 according to the 1985 census.[6] The quantitative and qualitative data presented in this article were collected as part of an operations research project aimed at improving the delivery of family planning services in the city.

Methodology

We interviewed 603 male residents of Ouagadougou in their homes, in their workplaces or on the street during February 1986. Between 19 and 22 interviews were conducted in each of the 30 geographic sectors of the city. Four quota categories were targeted in this sample: age, literacy, birthplace (Ouagadougou or other) and occupation. The number of respondents predetermined for each category was based on the most recent data available for Ouagadougou at the time (the 1975 census), with modifications based on knowledgeable informants' opinions as to demographic trends since 1975.[7]

Overall, the actual sample corresponds closely to the desired breakdown for age, literacy and profession, but not for birthplace. In the sample, 50 percent of the men were aged 18–29, 30 percent were 30–44

Therese McGinn is senior staff associate in the Operations Research Program of the Center for Population and Family Health, Columbia University, New York. Azara Bamba is former director of maternal and child health in the Ministry of Health and Social Affairs, Burkina Faso. Moise Balma is a social worker with the Ministry of Health and Social Affairs, Burkina Faso.

The operations research project on which this article is based was carried out by the Department of Family Health of the Ministry of Health and Social Affairs of Burkina Faso with technical assistance from the Center for Population and Family Health of Columbia University. The project was funded by the Research Division of the Office of Population of the U.S. Agency for International Development.

and 20 percent were 45–60. This is representative of the Ouagadougou population, according to 1985 census figures that became available after the survey analysis was completed; census data show 53 percent, 33 percent and 14 percent for the same three age-groups, respectively.[8] For literacy and occupation categories, the actual sample percentages were within five percentage points of those desired: Forty-five percent were literate, 21 percent had agricultural jobs, 61 percent were otherwise employed (in textiles, tanneries, private offices or the public service sector) and 19 percent were not working. Only 29 percent of the sample reported their birthplace as Ouagadougou, as opposed to the desired proportion of 40 percent. However, 40 percent of the men said they had spent the majority of their childhood (through age 15) in Ouagadougou. Thus, although the sample was not randomly selected, we believe it accurately reflects the city's male population.

Two focus-group discussions were held before, and two more after, the KAP survey. The purpose of the presurvey groups was to assist the survey planners in formulating and pretesting some of the survey questions and to gauge reactions to the survey among men who had been interviewed during an earlier pretest. The postsurvey groups discussed some of the more interesting or surprising findings from the survey. Focus-group discussions provide a means of gaining insight into the thoughts and behaviors of a target group; in this case, they allowed more in-depth explanations of the survey data during analysis of survey results.

Six to 12 male residents of Ouagadougou who fit the selection criteria were asked by the focus group facilitators to participate in each of the focus-groups. One group was composed of men aged 20–40 who had been interviewed for the earlier pretest, two groups comprised married men aged 25–35 and the last group was composed of married men aged 35–50. Each session was held in a neighborhood site known to the participants, such as a nearby office or a community center; all discussions were recorded on audio tape and notes were made by a reporter seated outside the group circle. Three of the sessions were conducted in the most prevalent local language, Moore; the other was in both French and Moore. Initially the men were reluctant to express their own views; they had been accustomed to questioning and listening to people they viewed as authorities, not being listened to by them, but in the end, there were few nonparticipants.

KAP Survey Results

The survey showed the men's knowledge of modern family planning methods to be high, given the newness of the national program and the virtual lack of any information directed specifically toward men. Ninety percent of the men recognized at least one modern or traditional method, and 75 percent knew of at least one modern method (i.e., condoms, the pill, injectables and the IUD). Almost two-thirds had heard of condoms and a majority knew of the pill and injectables. More than 60 percent of the men also knew of the traditional methods of abstinence and rhythm. Other methods, such as withdrawal and douching, were less well-known.

However, as Table 1 shows, these figures represent "prompted" knowledge, that is, recognition of a method once it is described. When the men were asked, before prompting, to cite any method, only one-quarter were able to do so. The large difference between those who could cite a method spontaneously and those who recognized a method when prompted suggests that much of the men's knowledge is superficial; they have heard of the methods, but their knowledge beyond that is limited.

This conclusion is supported by the responses to a survey question asking why respondents did not use family planning even though they knew about it. Half of the men said that they did not know enough about contraceptives to actually use them. Further evidence of their limited knowledge was found among men in the focus groups. Most men could explain only the basic notion of contraceptive methods, and much of the information they had was inaccurate. For example, many believed that if a woman used contraceptives, she would never be able to have children again; the idea of family planning for spacing purposes was largely absent. Other fears were mentioned, including malformations in the newborn because of the pill and the possible loss of the IUD in the user's body.

The survey showed moderate levels of past use of contraceptives, with 19 percent of men having ever used a modern method (15 percent had used condoms). Only seven percent reported current use of modern methods; this included men who used condoms and those whose partner used the pill, with some men reporting current use of more than one method. The popularity of condoms was probed in the focus groups and it was found that condoms (and douching) were closely associated with prostitutes and used more for venereal disease prevention than for contraception. Thus, it is possible that condoms are rarely used to prevent pregnancies within marriage.

Use of traditional methods, particularly abstinence and rhythm, was greater than that of modern methods for both ever-use and current use. However, these practices have different meanings for men than they do for women. In the focus groups, the men agreed that, in general, abstinence is practiced by the women—men "take care of themselves elsewhere." Therefore, although a man may be abstaining from sexual relations with his wife, or with one of his wives, he may not be abstaining from all sexual relations, and thus may not be using abstinence as a method of contraception.

This highlights a general problem in measuring contraceptive prevalence among men. In many settings, men have several partners; in addition to the wife or wives, there may be longstanding or casual extramarital relationships. Each woman has her own history of use or nonuse of contraceptives, which confounds the status of the man as a user or nonuser. While a woman may also have multiple partners, her contraceptive status is unlikely to vary, since most methods depend on her. Thus, among men, knowledge and attitudes toward family planning may be more useful variables to study than contraceptive use.

Responses to attitudinal questions on the survey showed that the majority of men shared a largely positive view of family planning. When nonusers were asked whether they thought they might use a modern method in the future, almost two-thirds (64 percent) of those who had never used a modern method said yes. An even

Table 1. Percentage of males (N=600) who knew of, had ever used and were currently using a family planning method, by method, Ouadadougou, Burkina Faso, 1986

Method	Knowledge		Ever use	Current use
	Unprompted	Prompted		
Any method	24.6	89.7	54.8	45.3
A modern method	u	75.5	18.8	7.3
Condoms	7.6	63.8	15.2	3.8
Pills	13.9	55.7	5.3	3.0
Injectables	5.6	53.1	1.5	0.3
IUD	0.0	27.1	0.8	0.5
Abstinence	9.0	64.8	30.7	25.3
Rhythm	0.0	61.0	28.8	22.1
Withdrawal	0.0	25.8	5.8	3.2
Douching	0.0	20.3	2.7	1.3

Note: u = unavailable.

larger proportion (71 percent) of past users of modern methods replied affirmatively. The reasons the men gave for future use of contraceptives included protecting maternal and child health (38 percent), limiting the number of children (23 percent) and having insufficient financial resources (12 percent).

Outright negative views on family planning were relatively rare. Even among the 124 men who gave a reason for not wanting to use family planning in the future, only 31 percent said it was because family planning was bad for the health. Another 31 percent said that they were too old to use it, and 12 percent said it was against their religion. The remainder cited a variety of other reasons.

An indicator of the demand for family planning is the percentage of respondents stating that they do not want any more children. Overall, 24 percent of men with living children said they wanted no more children. Among those with one or two children, just three percent wanted no more, but among men with three or four children, 34 percent wanted no more, as did nearly half (42 percent) of men with five or more living children.

The desired family size (calculated by adding the additional children wanted to the actual number of living children) reported by the respondents indicated a demand for surprisingly small families within the African context. As Figure 1 illustrates, the desired family size was around four for those who did not yet have four children. For those who already had four or more, the additional number desired was quite small. A demand for additional family planning information was also evident from the survey. Eighty percent of the men wanted more information for themselves, and 76 percent of the married men wanted it for their wives.

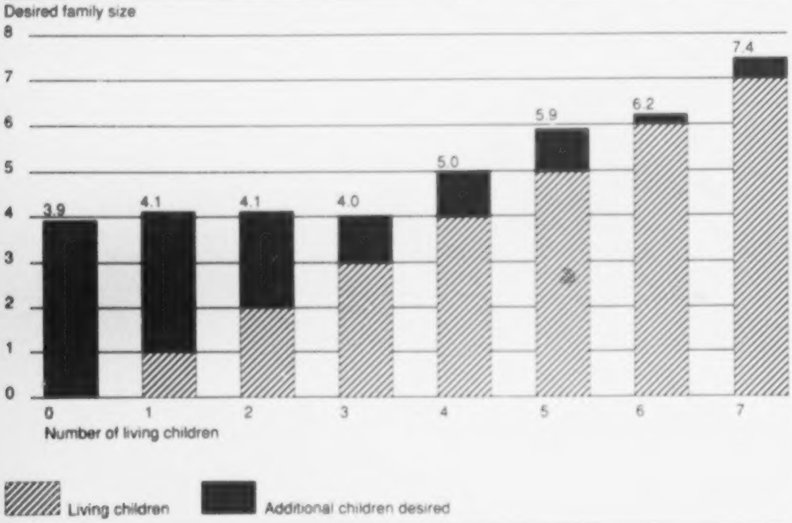
Focus Groups

The men's responses to the KAP survey questions in no way assure that they will actually use contraceptives in the future or that they will have only the number of additional children they said they desire. Instead, their responses indicate, at a minimum, the absence of strong or overt negative attitudes toward family planning and, at best, an openness and willingness to consider family planning in their own lives. The focus groups confirmed the survey findings, and they delved deeper to discover some underlying concerns the men had about family planning.

One fear voiced by the men was being left childless: One said, "When you have only two or three children, at the end maybe it's zero because the children will all die." Another added, "If a woman takes something to stop having babies and if measles comes and kills all three of the children she has, the husband has to marry another woman." These fears refer to limiting births, and the focus groups confirmed the survey finding that this was what most men associated with family planning.

Some men mentioned the common practice of fostering, that is, taking care of children who are not one's own: For example, one man remarked, "If you limit your children to be able to take good care of them, and then they send you children for schooling because you don't have enough, there's no more family planning."

Figure 1. Desired family size among males in Ouagadougou, by number of living children



Another much discussed concern in the focus groups regarding contraceptives was that they would lead to promiscuous behavior by women: One participant said, "For me, there is no problem. But for others, if you talk about this to them, some will say, 'If I give this to my wife, maybe she will use it to her advantage and go out and do what she wants, do stupid things. . . .' "

Some of these fears were concealed and expressed as concern regarding dangers to the woman's health. Inconsistencies often resulted, however. For example, in discussing the practice of using contraceptives without any medical supervision, one participant stated: "If it's a young girl, it's good, it's normal because she has her life to live. But if it's a woman who takes pills without prescription, that will create problems. Because there are women who take [the pill] and whose husbands don't know."

One participant put it quite succinctly, protesting that if "a woman is protected, she is free. . . ." However, many of the participants, often the older ones, disagreed with this line of reasoning. One remarked: "If she wants to go out, whether she takes the pill or not, she can go out."

Another added: "It's a question of trust between the husband and wife. Even prostitutes can become serious when they marry, even if they continue using contraception. With women, it's something in the blood. How a woman behaves depends on the individual."

One went as far as to condone women acting on their own: "It's no big thing if a woman who already has three or four children takes something in the absence of her husband. It's a help to her husband."

Much of the group discussions centered on why men would want to use family planning. In the survey, economic pressure was not often cited, but in the focus groups this was by far the most discussed issue. Life was hard, the men said, and getting harder all the time. Giving their children the basics—identified as food, shelter, health care and schooling—was a deeply felt responsibility: "Some days I have only 100 francs in my pocket and that's not enough to feed my six kids. To go into the house with 100 francs. . . . I don't feel good. What can I say to my wife and children?"

"Before I was married, I had no problems—clothes and amusements were what concerned me. Now that I'm married, I don't sleep at night because I have to find a way to get money to feed the children and my wife," explained another.

A much repeated refrain among these men was that couples should only have children according to their means: "With three or four children, you can nourish them, school them and care for them when they're sick. If you can do this, they will be the great men of tomorrow."

The men thought that women were largely ignorant of family planning, generally opposed to it and in need of education. In focus groups with women conducted as part of the same project, the women said the same thing about men. This lack of awareness between men and women regarding the attitudes and desires of their spouses was also evident in a qualitative study in Bobo-Dioulasso.[9] In our study, both women and men said they rarely discussed sexual matters with their spouses; indeed, communication of any kind was limited. Each group strongly recommended that the government make efforts to inform the other of the benefits and means of family planning. Overall, neither men nor women were comfortable addressing the subject with their partners themselves.

Discussion

The quantitative and qualitative study among males conducted as part of an operations research study to improve family planning services in Ouagadougou showed fairly high levels of knowledge of family planning, although much of this knowledge appeared to be superficial. Use of contraceptives, particularly current use, was shown to be low. Moreover, at least some of the condom use was related to sexually transmitted disease prevention outside marriage rather than to fertility regulation within marriage. Nevertheless, the findings are quite promising in view of the scarcity of family planning services in Ouagadougou prior to 1985. Before the Ministry of Health initiated its public program, contraceptives were available only through relatively expensive private channels, such as pharmacies, and through some physicians. Thus, the men who obtained and used these methods (or whose partners did so) may be considered quite motivated.

The men in the study had definite ideas about optimal family size and their own fertility. The fact that substantial numbers of them flatly stated that they want no more children runs counter to the frequently held view that African men want as many children "as God will give." While these expressed desires will not necessarily translate into actual use in the immediate future, they do indicate a demand for fertility control among the respondents.

As with many studies of men in Sub-Saharan Africa in recent years, the Ouagadougou findings paint a generally positive picture of male attitudes toward family planning. They show that men are deeply troubled about household finances and the health of their families, both of which can be addressed through family planning. Moreover, they show that men are open to learning about and using modern contraceptives.

But men do have concerns about family planning. They fear losing their children to the all-too-familiar ravages of disease. They fear the new drugs and devices that are reputed to harm their users. They fear, probably correctly, that it will change the balance of social control between men and women.

What do these contradictory elements mean for Burkina Faso's national family planning program? And, since the mixed feelings shared by men in this study are likely to exist in many countries, how can the new family planning programs throughout Africa best address them?

First, policymakers should not dwell excessively on the issue, since, as in Burkina Faso, male attitudes may be more positive than is supposed. Family planning is advantageous to men as well as to women, and men can be relied on to recognize its benefits, such as easing their economic load and contributing to a healthier family. Working under the assumption that men are hostile to family planning may be the greatest problem of all.

Second, pertinent family planning information should be directed to men. Focus groups or other qualitative techniques can be used to understand the issues that concern men (or any other segment of the population) and the findings can then be incorporated into educational campaigns and counseling programs designed specifically for men. Such interventions have financial and personnel costs, however, and the decision to expend these usually scarce resources on educating men (or any subgroup) must be weighed against the potential difficulties they raise for the program. If the opposition is particularly vehement, if the society is intensely male-dominated or if the program relies heavily on male methods, an active educational campaign would be warranted. In the absence of these circumstances, however, the program may do best by targeting its messages to potential acceptors and letting the changing social climate alter unfavorable opinions over time.

Third and most important, program managers and policymakers should maintain the availability of family planning services and work to expand them. The best antidote to the current misunderstanding and lack of information is exposure and experience. Every new user sensitizes family members and friends through his or her experience and makes family planning more familiar to them. To ensure that a positive image is portrayed, the quality of care must be given as much attention as the quantity. In Burkina Faso and throughout Africa, family planning is much less controversial today than it was even five years ago, partly because policymakers, practitioners and the public have more experience with it. As services spread to cover all men and women who want to control their fertility, the practice of family planning might even achieve the exalted status of being considered routine.

References

1. F. van de Walle and B. Traore, "Attitudes of Women and Men Towards Contraception in Bobo-Dioulasso," Working Paper No. 13, *African Demography Working Papers*, Population Studies Center, University of Pennsylvania, June 1986, p. 24.

2. M. A. B. Mustafa and S. D. Mumford, "Male Attitudes Towards Family Planning in Khartoum, Sudan," *Journal of Biosocial Sciences*, **16**:437, 1984.

3. D. W. Belcher et al., "Attitudes Toward Family Size and Family Planning in Rural Ghana," *Journal of Biosocial Sciences*, **10**:59, 1978.

4. M. E. Gallen, L. Liskin and N. Kak, "Men—New Focus for Family Planning Programs," *Population Reports*, Series J, No. 33, 1986.

5. The World Bank, *World Development Report 1988*, Oxford University Press, New York, p. 222.

6. Institut National de la Statistique et de la Démographie, "Recensement Général de la Population: Résultats Provisoires," Ministère de la Planification et du Développement Populaire, Ouagadougou, Apr. 1986.

7. Experts at the Office de Recherche Scientifique et Technique Outre-Mer and the Institut National de la Statistique et de la Démographie, personal communication, 1986.

8. S. Yeremganga, "Structure par Age et par Sexe," Ministère de la Planification et du Développement Populaire, Ouagadougou, 1986.

9. F. van de Walle and B. Traore, 1986, op. cit. (see reference 1), p. 28.

Resumen

Una encuesta sobre Conocimiento, Actitud y Práctica realizada entre 603 varones en Uagadugú, capital de Burkina Faso, reveló que, previa breve descripción de los métodos, el 75

(Continued on page 95)

Investigating the Social Context of Fertility And Family Planning: A Qualitative Study in Peru

There is a widespread idea, held particularly by Peruvian men, that having many children is a sign of faithfulness in a woman; conversely, the use of family planning is strongly associated with infidelity.

By Alfredo L. Fort

Summary

Focus-group sessions conducted in 1986 and 1987 with Peruvian women living in two cities far from the capital indicated that women's control of their fertility is undermined by their low status in society and their ignorance of reproductive physiology. Contributing factors are their lack of any concept of planning for the future and a weak family planning program. Although there has been some increase in the use of modern methods of contraception, nearly half of all current users rely on traditional methods such as rhythm, which is often used in reverse and is therefore ineffective. Previous studies had singled out fear of side effects as the main deterrent to the use of modern contraceptives. However, the focus-group discussions revealed that women who were using modern methods were as fearful of harmful effects as women who were not using such methods. In fact, the women who were using modern methods were doing so because their dread of further pregnancies was even stronger than their fear of illness or death.

Although surveys had shown the preferred family size in Peru to be three, the focus groups revealed conditions that encourage women to have more children than they believe is ideal. Child mortality is still at a high level. Couples rarely discuss family size early in their marriage, if at all. Women would prefer to delay childbearing for 2–3 years after marriage, but feel they must have children immediately to please their husbands. Wives also fear their husbands' disapproval if they use explicit methods of contraception, because family planning is associated with infidelity and having many children, with faithfulness. In this context, family planning is used primarily as a means of limiting, rather than spacing, births.

Background

Peru's birthrate dropped from 46.3 per 1,000 population in 1960–1965 to 36.7 per 1,000 in 1980–1985. The total fertility rate (TFR) declined slightly between 1977–1978 and 1984–1986, from 4.7 to 4.1 lifetime births per woman. Nevertheless, as is common in many developing countries, particularly those in Latin America, significant change has occurred primarily in the cities, which are expanding rapidly because of migration from rural areas. As can be seen in Table 1, data from national surveys carried out during the past decade have shown large differences in fertility rates between Peru's various geographical regions and Lima, the capital city. For example, the 1986 Demographic and Health Survey (DHS) revealed that the TFR among women living in Lima was 2.5 births per woman, compared with 5.4 and 6.0 among those living in the mountains and the jungle, respectively.

These surveys have also found a moderate increase in the use of contraceptives—particularly that of modern methods* (Table 2). For example, between 1977–1978 and 1986, the proportion of women relying on modern methods of family planning rose from 11 percent to 23 percent. Nevertheless, the so-called traditional methods of contraception still predominate. The 1986 DHS indicated that half of all current users rely on such methods; rhythm, the most prevalent method, is used by nearly as many women as the pill, the IUD and sterilization combined.

Table 3 (see page 90) shows the relative prevalence of the rhythm method in different geographical regions of Peru as reported in the DHS. For example, rhythm is less widely used than the more effective modern methods in Lima (20.6 percent vs. 33.2 percent) and in the jungle (10.9 percent vs. 16.6 percent), while in the mountains, the proportion of women using rhythm is almost twice that of women using the more effective modern methods (16.2 percent vs. 8.7 percent).

However, what respondents meant by "rhythm" is uncertain, because the few surveys carried out in Peru used closed-ended questions that did not describe the methods under consideration.[1] Other traditional methods, such as douches and herbs, although mentioned by small proportions of the DHS sample, are used throughout the country, even on the urbanized coast and in Lima. As with the rhythm method, there is a need for more research on the way these methods are used and the context in which they thrive.

Preliminary research and experimental programs in population planning were carried out in Peru in the mid-1960s. Most of these efforts ended with the advent of military rule, which lasted for 12 years. Since 1981, however, a joint project between the Pan American Health Organization and the Peruvian Ministry of Health, with support from the United Nations Population Fund, has been adding family planning services to the more general maternal and child health (MCH) services offered by state hospitals and health centers throughout the country.

Unfortunately, this program has been undercut by a lack of strong political commitment, reflected in the absence of clear

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*Modern methods are defined as oral contraceptives, the IUD, sterilization, injectables, vaginal methods (such as the diaphragm and spermicides) and the condom.

targets for either population growth or contraceptive prevalence. The authority given to the program administration has varied from a low position within the MCH program to the nominally high position of a general directorate of family planning. As a result, the program lacks the stability and organization it needs to make substantial progress. Services remain concentrated in hospitals and urban health centers, and the supply of contraceptives has been irregular. Thus, progress in promoting the use of modern methods has been slow. In a 1982 assessment of family planning efforts in more than 90 developing countries, Peru's program was categorized as "weak."[2] An evaluation carried out by the National Population Council in five health regions of Peru estimated that in 1983, 7.3 percent of women of childbearing age became new acceptors through the program.[3] This estimate may be too high because of the inclusion of Lima, which had a rate of 9.2 percent, and the use of reduced catchment populations as denominators when calculating percentages in the inner health regions. In recent years, articles appearing in national bulletins of Peruvian family planning agencies have referred to the "ambiguity with which [our] population problem is managed"[4] and to the "catalepsy" of the National Committee on Population, which was set up to support population activities in Peru.[5]

One important obstacle to the acceptance of modern contraceptive methods may be that the centrally organized and controlled program administration in Lima does not take Peru's cultural variation into account. Little is known about the beliefs and motivations that influence women in their decisions regarding fertility and childbearing, information that could be very helpful in efforts to improve the delivery of reproductive health services and education.

There are two issues in particular that should be explored further. One is that of "unmet need" for contraception among women who are either married or living in a consensual union.[6] A recent analysis of 1986 DHS data found that of four Latin American countries, Peru had the smallest decrease in unmet need during the last decade, and that the level of need among Peruvian women remains very high. Women commonly attribute their reluctance to use contraceptives to a concern about side effects, but it is possible that other powerful deterrents are also involved. An expressed desire to have no more children could conflict with underlying attitudes about family size and the childbearing process. A second question is why women seem to prefer to use family planning to limit rather than to space births.

Because of the complex nature of these questions, we chose to use qualitative techniques rather than a structured survey. Recent literature has reported the use of focus-group discussions in research related to population policy and family planning. For example, focus groups were used in a study of fertility transition in Thailand[7] and in research on family planning awareness, attitudes and practices in Mexico and Indonesia.[8] More recently, such discussion groups were included in studies on attitudes toward sexual and demographic education in Costa Rica[9] and on the factors responsible for nonuse of contraceptives among couples in Nepal who desired no more children (part of the DHS program).[10] We investigated the issues raised earlier in this article through a series of focus-group discussions in two Peruvian cities as part of a larger study investigating attitudes and values related to reproduction.

Methodology

The study was conducted in Cusco and Iquitos, cities representative of two distinct and understudied regions in Peru—the Andes mountains and the Amazon jungle, respectively. The study samples were selected from the shantytowns surrounding the cities, where poor living standards, unemployment and traditional rural family-formation patterns appear to be more common than elsewhere in Peru.

Women had to have at least three living children to be eligible for the study. They also had to be of reproductive age (15–49), currently married or in a consensual union, fecund, not pregnant and residing in a shantytown. In each city, the women who met these criteria were divided into three contraceptive-use categories: those who used modern methods, those who used traditional methods and those who had actually rejected contraceptive use or had never decided to use contraceptives (never-users). The criterion of having at least three living children was included to ensure that the participating women had had the opportunity to think about limiting the size of their family and to make categorization more accurate. In a society in which large families are the norm, it could be misleading to place a woman who had one or two children and had never used contraceptives in the never-user category. The cut-off point of three children was set according to the average number of children (2.7) preferred by currently married Peruvian women.[11] To identify any variation between younger and older women, we separated the participants in each user category into two age-groups: those younger than 30 and those 30 and over. There were two sessions, each with different participants, for each age-group, user group and region, for a total of 24 separate focus-group sessions, 12 in each region.

Table 1. Total fertility rates in Peru, by region, 1977–1978 Peruvian Fertility Study (PFS), 1981 Contraceptive Prevalence Study (CPS) and 1986 Demographic and Health Survey (DHS)

Region	PFS	CPS	DHS
Total	**4.7**	**4.5**	**4.1**
Lima	4.1	3.5	2.5
Coast*	5.2	5.1	3.8
Mountains	7.6	7.3	5.4
Jungle	8.1	8.0	6.0

*Excluding Lima.

The modern-method users were the first group chosen at each location. Women attending the family planning clinic of the state hospital in each region who matched the criteria were asked to participate. Those who agreed were given an invitation sheet with the date, time and meeting place, along with a note indicating the nature of the discussion, its duration and the name of the moderator and stating that a small sum would be paid for transportation. Each focus group was conducted a few days after the invitations had been issued; previous experience had shown that holding a session too long after the invitations had been received resulted in

Table 2. Percentage of currently married women using a method of contraception, by type of method used, 1977–1978 PFS, 1981 CPS and 1986 DHS

Method	PFS (N=5,061)	CPS (N=3,925)	DHS (N=2,899)
Total	**31**	**41**	**46**
Modern	**11**	**17**	**23**
IUD	1	4	7
Pill	4	5	7
Female sterilization	3	4	6
Injectables	1	2	1
Vaginal*	1	1	1
Condom	1	1	1
Traditional	**20**	**24**	**23**
Rhythm	11	17	18
Withdrawal	3	4	4
Other†	6	3	1

*The diaphragm and spermicides.

†Douches and folk methods (such as herbs). In the PFS data, this category includes abstinence as well.

Table 3. Percentage distribution of currently married women, by type of contraceptive used, according to region, 1986 DHS

Type of method	Total	Lima	Coast*	Mountains	Jungle
Most effective modern†	21.2	33.2	27.2	8.7	16.6
Rhythm	17.7	20.6	19.6	16.2	10.9
Other modern‡	1.7	2.6	1.4	1.4	0.3
Other traditional§	5.0	6.4	3.8	4.7	5.1
None	54.4	37.2	48.0	69.0	67.1
Total	100.0	100.0	100.0	100.0	100.0

*Excluding Lima. †The IUD, the pill, female sterilization, male sterilization and injectables. ‡The diaphragm, spermicides and the condom. §Withdrawal, douches and folk methods.

low attendance because the women forgot about the session or lost the information.

The focus groups were held in a small room at the state hospital. At the suggestion of local leaders and community health workers, we scheduled the focus groups to begin in the late afternoon and to finish by early evening. Each session lasted approximately two hours and was conducted by the principal investigator. Although the sessions were conducted by a man, the women discussed a wide range of matters related to sex and reproduction without embarrassment.* We made a special effort to create a casual and friendly atmosphere, to reassure participants of the value of each individual opinion, and to stress the importance of a nonjudgmental attitude.

The traditional-method users and never-users were made up of women from two shantytowns chosen at random from those where the modern-method users lived. There were no obvious distinctions among the shantytowns involved. Participants were recruited with the help of a woman from a local mothers' club who was given some training on the selection criteria. Recruitment for these two groups was carried out house to house, and meetings were held near where the women lived, either in the community center or in a participant's home. The sessions were conducted during roughly the same period as those involving the modern-method users.

The study was carried out in December 1986 in Iquitos and in March 1987 in Cusco. All sessions in each region were completed within three weeks. A total of 173 women participated. Of these, 77 were from Iquitos (an average of 6.4 women were in each focus group) and 96 were from Cusco (an average of 8.0 women were in each session). The average age of those in the under-30 group was 24.7 years in Iquitos and 24.1 in Cusco; the average age of those in the 30-and-over group was 33.4 and 36.1, respectively.

The investigator used a discussion guide comprising some 30 questions to direct the focus groups. The first section of the guide explored characteristics of family formation, such as the childbearing process and relationships between husbands and wives. The second part was concerned with attitudes toward and experience with various methods of contraception. The final section dealt with abortion. All sessions were tape recorded, and notes about special characteristics of respondents were taken at the same time to allow matching of answers on the tape with specific participants.

Family Formation

The section of the discussion devoted to family formation explored age at first union, family size, the value placed on children and the husband-wife relationship. Each participant was asked to specify her ideal and actual age of union. The average age at union among all participants was 17.7 years. Women in Iquitos not only expressed a desire for earlier unions, but did in fact enter unions earlier than their counterparts from Cusco. Among women who were under 30, the average age at union in Iquitos was 16.6 years, while in Cusco it was 17.5 years; among those who were 30 and older, the average age at union was 17.6 years in Iquitos and 18.6 years in Cusco. Within each region, however, there were no differences between age-groups and between user groups. The norm of earlier unions in Iquitos could explain the higher fertility rate found by the DHS among women in the jungle, in spite of a rate of contraceptive use slightly higher than that found in the mountains.

The participants acknowledged that early union disrupts adolescent life and education and that it leads to increased fertility. They felt that early marriages could lead to marital failure because of lack of experience; there is a pervasive idea that women should know "how to serve [their husbands] well." The group discussions revealed a very common scenario for the start of family life: that of the young woman who is made pregnant by the first man she goes out with. Adolescent women rarely receive much guidance or sex education from their parents: Their queries about how offspring are born are met with incorrect and evasive answers, such as "Babies come from airplanes" or "Baby pigs are born from their mother's mouth."

Ideal intervals between union and first birth were also explored in some of the focus groups, particularly those in Iquitos. Among the participants who discussed this issue, the ideal gap was 2–3 years; these women said, however, that union and pregnancy often occurred almost simultaneously. Delay in having children was thought to be contrary to men's wishes, and women felt their husbands would leave them if they did not bear children soon after union. When age differences were taken into account, the women in each group had a similar number of children. However, the average ideal family size of women in Iquitos was higher than that of the women in Cusco (3.2 vs. 2.3). This difference was reaffirmed by their respective definitions of a large family: six children for the women in Iquitos and four or five for those in Cusco.

During this part of the discussion, several important factors became evident. First, the low status of women in both the family and society makes it difficult for women to exercise control over their own fertility. Some of the modern-method users said that they had gone off with a man to escape parental oppression. As someone in the older group said, however, that was "getting out of one cage to enter another." Moreover, in all the groups, women spoke of childbearing as inevitable. Once they begin having children, they said, "the machine starts" and "from one, one goes into having a lot." A third factor that emerged from these discussions was a lack of any concept of planning. These women live an everyday life in every sense of the word: Most wages are earned and spent daily, and goods and foods are purchased at need. Reproduction follows the same pattern, with pregnancies too being unplanned. The women said that they were "taking care" (practicing some form of contraception) "but [the children] are increasing." The belief that fertility is beyond their control could help explain their lack of interest in contraception for spacing, rather than limiting, births.

The issue of family size is closely tied to

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*Previous experience had shown that women in these areas of Peru were very enthusiastic about attending meetings at which they might learn something useful. Their eagerness to attend a *charla* (talk) and receive something from it seemed to offset any reservations they may have had.

the value placed on children. In the shantytowns, children apparently have a better chance of survival than in rural areas. Nevertheless, some 20 percent of the babies born alive to women who participated in the focus groups were dead by the time of the sessions. This high rate of child mortality is one reason why women with at least three children might still want to have more. Companionship and financial security in old age are also important motivations in a country where organized social security plans reach only a small proportion of the population, mainly those living in urban areas. Support for aging parents comes primarily from sons, as most paying jobs in Peru are held by men. Therefore, when the participants were asked what sex distribution they would prefer if they were to have only three children, the majority specified two boys and one girl. Moreover, they said, boys "land on their feet," while girls "suffer more" and have to bear with "children and the home workload." Girls will, nevertheless, later provide company for their mothers, visiting them and helping them with the housework. This role differentiation is an extension of task assignments at home: A boy typically fetches water, runs errands or "helps his father," rarely doing any kind of washing or child-minding; girls, on the other hand, start with kitchen work at three or four years of age and then move on to baby-sitting and laundry.

In a further effort to understand the value of children, the investigator then explored attitudes about childless couples and infertile women. The participants condemned couples who choose not to have children as "irresponsible" and "egoistic." They compared a childless home to "a garden without flowers" or "a nest without birds." To these women, children seal and justify unions ("the reason to get married is to have children"), and marital dissolution is an almost automatic consequence of childlessness. They also frequently mentioned the pressure men exert on their wives to have children. If a wife fails to do so, they said, the husband will "find another [woman] with whom to have that child." Questions about infertile women elicited expressions of deep sorrow and pity. The participants saw such women as persons who were experiencing great frustration and whose marital lives were endangered.

It was clear from the group discussions about husband-wife relationships that couples rarely talk about family-size preferences early in their marriage. Family size is discussed, if at all, "afterwards, when there are four or five, only then." What occurs is that the mother eventually gets "fed up" and seeks help. In this context, family planning is usually seen not as a way of spacing, but as a way of bringing fertility to an abrupt end ("we had enough"). Except for the spouses of modern-method users, husbands usually do not participate in this decision.

The women blamed their husbands for insensitivity to the family's needs ("they do not care about numbers"). Indeed, they felt that men see children as a way of keeping their wives at home. In general, the participants saw children as "enslaving" them. Furthermore, a woman who has many children is seen as a "señora" (married, a lady), an image that is believed to prevent her from being approached by other men when she goes out. This appears to be related to the widespread idea, held particularly by men, that having many children is a sign of faithfulness in a woman.

Conversely, family planning is strongly associated with infidelity. Women themselves sometimes adopted this attitude. As one participant said, "Why should I 'take care' if I am not having children from other men?" But the participants also related family planning to "going out," to "dialogue" between women and to "change." They see mothers' clubs, health centers and other communal institutions as schools of a sort. Men ridicule women's participations in such activities, according to wives, "because it is not agreeable to them."

Other differences in roles revolve around cooperation and conflict at home. Although the women started out by justifying their husbands' refusal to help with family duties, further discussion revealed that they were very frustrated by the excessive amount of work they had to perform at home, an injustice that was not acknowledged by men. The participants emphasized the contrast between their confinement and their husbands' absolute liberty; most of them could not even discuss the matter with their husbands, let alone change their minds. The husbands of some of the younger women who were using modern methods did seem to have a more cooperative attitude, however.

Family finances reflected another facet of the husbands' control. Because the men dole out small amounts of money daily, their wives are not able to save any spare cash for hairdressing or clothes, which they feel they need to "keep" their husbands. However, this system does provide them with a unique opportunity for daily socializing as they shop in the local markets.

The women see the liberty of their partners as providing opportunities for affairs outside the home. A not insignificant number of the participants actually justified this as a reflection of men's "different nature," even saying that if a man is unfaithful, his wife is at fault for harassing him or for not "keeping smart enough." Such notions are part of an ideology that also holds it as basically wrong for a mother to go out freely and that "abandonment of [one's] children" is the ultimate shame. The limited efforts of some women to change their situation had encountered strong opposition from their husbands. A few of the participants said that employment of women was a possible way of improving the situation.

The last topic covered in this section was marital violence. The participants said that wife-beating was common, and that beatings usually occurred when a man had been drinking or when he was having affairs outside the home (which, they said, "alters his mood"). Some of the participants associated drinking with higher fertility, probably because of an increase in unprotected intercourse. Separations and abandonment, more common ways of resolving conflict than divorce, are not infrequent.

Family Planning Services

The second section of the discussion explored experience with the government family planning program, attitudes and knowledge about contraception and experience with contraceptive methods. Only the users of modern and traditional methods had had experience with the family planning program based in the state hospital. Because the two groups of women made similar comments about the program, their remarks were not separated. They criticized the service for delays, disorganization and corruption. They rated the attention they received as generally good, although they had some complaints about being rushed through and being treated with insensitivity and hostility. They resented the lack of privacy in the examination rooms, complaining that "everybody sees us" and "there is not a door closed." In all the groups, the women agreed that they would prefer for women doctors to perform internal examinations because they saw them as "more understanding" and "gentler" than men.

In Cusco, the family planning services were inconveniently combined with prenatal services. There were no structured family planning talks for women admitted to the hospital, and doctors and nurses advised patients personally. This situation was conducive to corruption: In some cases, doctors had refused to insert an IUD at the clinic, saying that such devices did not exist, but later referred the patients to their private practice and charged a fee for insertion.

The participants agreed that there were practically no family planning services available in rural areas. They requested that clinic hours be extended into the afternoon, saying that there was a huge amount of housework to accomplish in the mornings, such as early preparation of breakfasts and packed lunches, daily marketing, baby-minding and cooking. In addition, the women themselves often went to work.

The participants said they received hardly any family planning information through the mass media, and very little through health centers, mothers' clubs or government programs. They found the amount of family planning information available to them sparse in comparison with the profusion of material and messages delivered for immunization campaigns.

Use of Modern Methods

In Iquitos, most users of modern methods participating in the discussions were using the pill, whereas in Cusco, the majority were using the IUD. These findings are similar to those on the relative method preferences found in the few surveys carried out in each area.[12] There were no major differences between the two communities in the amount or content of family planning information provided or in the availability of methods.

The participants were asked how they had first learned about family planning. In both Iquitos and Cusco, the most common way was through contact with government health institutions or personnel (most frequently after childbirth or curettage in a hospital or when attending a children's clinic). This was consistent with results of the DHS, in which government hospitals or health clinics were the most frequently identified source of current methods or information about methods. In Cusco, mothers' clubs, relatives and friends were also important sources. Overall, talks by program officers accounted for less than 10 percent of sources of information, a figure consistent with the limited efforts made to date in public education.

In general, women appeared to be using the modern methods correctly, although when they had first begun to use their method, they clearly had received very little information about it, the mechanism by which it worked and the side effects they might experience. Perhaps in part because of this lack of information, they had a long list of complaints and fears about harmful consequences of contraceptive methods. Women in areas in which a particular method was prevalent mentioned more side effects and fears related to that method than to other methods.

Given so many fears about dangerous side effects, why did these women continue using the modern methods? The women typically responded that pregnancy would have been worse than the side effects, citing the "sacrifice," the "pain" and the "heaviness" of pregnancy. One of the participants created a slogan that expressed the intensity of their feelings: "Better death than to have more!" The under-30 group made it clear that their determination to avoid further pregnancies was overriding their fears of cancer and death. Some said that they continued only because of their husband's support.

Use of Traditional Methods

Women who used traditional methods of contraception were able to name the more common modern methods, and sometimes even acknowledged their effectiveness. Nevertheless, they lacked knowledge about use and mechanism of action. Their fears of side effects were more intense than those of the modern-method users. They believed that if they used modern methods, they would be more prone to illness. According to one woman, their fears were engendered by the comments of dissatisfied users who "leave [the methods] when they are harmed." Some women defined an effective method as one that "doesn't harm me."

Women in both regions used a variety of traditional contraceptive methods. They had confidence in a method if they or someone they knew who used it had achieved an interval of two years without pregnancy. In Iquitos, the four most often mentioned were douches, *la regla* ("the period"), Chloromycetin™ (an antibiotic) and herbal beverages. In Cusco, on the other hand, *la regla* was the most popular method, followed by herbal remedies and douches. Some women preferred to combine two traditional methods rather than relying on one. This could reflect a lack of confidence in the effectiveness of any single method or might simply describe the usual pattern of use of traditional methods. Herbs were consistently found to be more prevalent in Cusco (the mountain town) than in Iquitos (the jungle town). This was an unexpected finding, because native tribes in the Amazon jungle are known to use herbal medicine for fertility. However, in Iquitos, the people are basically *ribereños*, dwellers of the river margins who have migrated to the nearest city, and not actually natives, who live deeper in the jungle.

Women using traditional methods had usually learned about these methods from family members, often their husband or mother, or from friends and neighbors. In the case of *la regla* only a few women had obtained information from a talk at the hospital or the school.

The group sessions indicated that the local population regards *la regla* as being equivalent to what we call the rhythm method. However, further discussion revealed that most users were, in fact, applying it in reverse—that is, they were having intercourse during the high-risk days surrounding ovulation. We found a widespread belief that the uterus "opened" during the menstrual period. This event was associated with fecundity, in the same way that the end of fecundity was signaled by the end of menstrual periods. Thus, this method entailed waiting to have intercourse until the uterus "closed." When these women were taught a simplified version of the method—to restrict intercourse to the periods of eight days before and after the menses—they used the method in reverse, waiting until eight days after the menses to begin having intercourse and avoiding intercourse beginning at about eight days before the menses. Some women would wait 10 or even 12 days after the menses before having intercourse, because they believed closure of the uterus could be delayed.

Other common beliefs seemed to reinforce this idea. In Cusco, women said repeatedly that sexual intercourse during the menstrual period was sure to result in pregnancy. A husband who "took care of" his wife would never "make contact" during the menstrual period. Such views were expressed not only by women who used traditional methods, but also by some current users of modern methods. Women do not bathe during menstruation, not only because they believe that there is an open wound, but also because they believe they could have "accidents" (pregnancies) if they carelessly swim in "bad waters." Another practice that seems to arise from this notion is that most herbs and remedies believed to affect fecundity are taken during, or around the time of, the menstrual period.

Some women did not consider *la regla* a method of family planning at all. In fact, when first asked if they were "taking care to avoid getting pregnant or having more children," a not infrequent response was: "No, only naturally." Further questions revealed that they were using *la regla*. Periodic abstinence could be practiced regularly and in a context lacking specific birth limitation purposes. These alternative meanings must be taken into account when interpreting survey responses. Some respondents categorized as nonusers could, in fact, be practicing this "natural" method. In general, women seemed aware that *la regla* was not very effective and that they might be using the method improperly. They were dissatisfied because their husbands did not respect the period of "danger"; in any case, they believed the method was not adequate when used alone.

The focus-group participants seemed to feel embarrassed to speak about abstinence and withdrawal. Women who did comment said these methods were not much accepted or used by their husbands.

Throughout the sessions, particularly those in Cusco, women referred to a variety of local herbs used to delay pregnancies. Among the most popular were parsley, mallow, and field grass mixed with linseed. Other native plants, such as *allcoquisca, duraznillo, rahuar chunca* and *llampu jarma*, are usually taken as an infusion called *mate*, and are sometimes blended with lemon juice or water. The focus-group participants explained that fresh herbs "cool down the ovary" and "sterilize," whereas "warm things fertilize." This reasoning also explains their habit of drinking these infusions after letting them *reposar*, that is, leaving them out in the open during the night, when temperatures fall to a few degrees above freezing.

If they want to have a child, women stop taking the herbs for several months. Most women are not entirely confident that the herbs delay pregnancy, but they regard them as natural and free from side effects (although, according to one woman, too many fresh herbs can "give a cold, a chill").

The focus-group participants believed that douches act through the same mechanism as herbs. In fact, women use a preparation with mallow water or water with lemon juice for the douches, which are said to "cool down the womb." The women said that they restored fecundity by injecting calcium intravenously, an old custom still practiced in many rural areas. The burning sensation produced by the injection of calcium is associated with strength and healing. Women also take vitamins and honey to "warm up" the womb and restore fecundity.

Lemon taken alone, with infusions or medicines, or in douches is thought to exert a powerful effect on fecundity. Focus-group participants said its "sourness" has a spermicidal effect. It also "heals wounds [by] drying them." Here, the rationale seems to be that by diminishing menstrual bleeding, lemon juice impairs fecundity. The extreme acidity of the juice has given rise to a unique name used in the jungle: When people say a substance is *patco* (sour), as lemon is, they probably mean that its sourness affects fecundity.

In many parts of inner Peru, antibiotics can be purchased without a prescription. Chloromycetin™, a popular brand of chloramphenicol originally intended for the treatment of typhoid fever, is widely used by mothers as a folk remedy for diarrheal diseases, and somehow its use has been extended to family-size limitation. Women in the jungle believe that its "sourness kills the microbe [spermatozoid]."

Liver salts, which are generally used in combination with other "sour" substances like lemon, were said to produce anemia (by "killing red blood cells"). Again, the rationale seems to be that these preparations decrease menstrual flow and thus impair fecundity. Women claimed they needed to "take tonics [ferrous syrups] to return to normal menses."

Use of No Method

One of the goals of the focus groups was to determine why some women chose not to use any method of contraception. In addition to the constraints imposed on women by their status in society and in the family and by their limited knowledge of effective methods, other factors directly related to the methods themselves could be involved.

Women gave a range of reasons for not using contraceptives. For example, in Iquitos, women under 30 who had heard about the family planning program or about contraceptive methods referred to "lack of time" and "lack of transportation," among other problems. According to the older women, their husbands disapproved of their using contraceptives. One mother thought that breastfeeding was an adequate method. Nevertheless, fear of health hazards was the most common reason mentioned for not using a modern method. The never-users gave examples similar to the ones mentioned by the modern-method users.

The never-users expressed mixed feelings when they were asked whether they or their husbands would ever use a method of contraception. In some groups (particularly in Iquitos), women reacted positively. Nevertheless, it seemed to be too soon for them to decide. Those under 30 were more likely to think that their husbands would approve, although there was still much uncertainty among them as a group. There was not one spontaneous mention of a specific method likely to be used. In Cusco, some said they would choose to "take care naturally." Their descriptions about the way they would use this method suffered from the same errors as those of the actual users. They expressed a lack of confidence in this method because of changes in menstrual patterns.

Overall, compared with women in the other groups, the never-users were highly distinctive. They seemed to be uninvolved in most local activities and groups, such as mothers' clubs. The majority were not aware of the existence of a family planning program in the state hospital, although it was close to them. Likewise, they used very few hospital services, had not received any information on family planning from any source and knew even less than the traditional-method users about modern methods. The great majority had either no knowledge or incorrect information: "We don't know, don't understand"; "We have heard many things [about the methods]"; "How are we going to take the pills or have the injections, before or after the periods?" They admitted fearing modern contraceptive methods and said that their fear prevented them from using such methods.

It is interesting that although nonusers were able to name some modern methods of contraception (i.e., they could have been categorized as "knowing" a method in a survey using a closed-ended questionnaire), they knew almost nothing about these methods and were very afraid to try them. Likewise, their knowledge of other health matters—such as the treatment of diarrhea and the care of newborn babies, which had been the subject of recent information, education and communication campaigns—was meager.

Abortion was included in the discussion guide in an attempt to assess its place in women's attitudes toward fertility control. In general, the focus-group participants did not approve of induced abortions (or "extractions," as they were euphemistically known) because of danger to the mother's health and moral or religious constraints. (The latter were not mentioned by any users of modern methods.) Nevertheless, throughout all age-groups, the participants justified abortion on grounds of "desperation" if a woman "had too many children." Furthermore, they felt that it was more acceptable if carried out early, because it was still "pure blood." The participants said abortion was common, especially among adolescents, but also among multiparous women. The methods they mentioned included repetitive intramuscular injections of hormonal preparations, insertion of rubber probes, use of pumps, deliberate falls and injection of liquids into the uterus. Herbs are also commonly used to induce abortions in Iquitos. Private doctors perform most abortions, according to the women, but they charge very high fees (as high as one-third of a lower-middle-class monthly salary). Abortions are also performed by practitioners who are not doctors, at lower cost but at greater risk to the woman's health. The survey participants supported legalization of abortion in exceptional cases only, demonstrating that it remains a sensitive issue. In general, they preferred to support family planning rather than encourage abortion.

Discussion

This qualitative study of women in two cities in inner Peru revealed a social context largely unfavorable to the use of explicit methods of contraception. Descriptions of the husband-wife relationship seem to confirm Peruvian women's low status in society, with childbearing and childrearing acting as effective instruments of men's domination. An almost total ignorance of the physiology of reproduction and the lack of a concept of planning in everyday life further complicate women's efforts to control their fertility. Women's experience in reproduction resembles a "flood tide of fertility" in which birthspacing is still an alien concept. Users of modern contraceptives do not necessarily possess greater knowledge than nonusers or users of traditional methods about modern methods, but despite various fears of side effects (the main barrier to use mentioned by traditional-method users and never-users) they are deeply committed to their use.

In the context of Peru's social structure, women have recourse to traditional methods, which are used and promoted by friends and relatives and can be obtained very easily at little or no cost. Their use follows the usual pattern of life, such as the habitual drinking of herb infusions or the free use of antibiotic capsules to treat any ailment, and they are perceived as free from side effects. It can be argued that the use of traditional methods is an effective way of tackling a problem not resolved by the current system of modern contraceptive service delivery, in which corruption, disorganization, lack of privacy and lack of promotion predominate. Users of traditional methods resemble the street vendors of the Peruvian economy; in the same way that these informal merchants avoid the hassle of a disorganized and corrupt system of accounting and taxation, "informal contraceptors" avoid long lines, fears of cancer and male disapproval. Informal contraceptors probably do not achieve substantial fertility reduction, but they satisfy their immediate intentions while avoiding an insufficient and stereotyped family planning program that does not take cultural variation into account. In the end, health officers show pride in the large proportion of traditional-method users in the statistics of all current users.

The richness of descriptions found here reflects only a few of Peru's cultures and ethnic groups. If we believe that the traditional-method users and the never-users are potential users of modern contraceptives, we must improve our understanding of their way of life so that we can design programs that are more acceptable to these women. Informational and educational materials, for example, could use the "hot/cold" or "sourness" notions as a basis for approaching audiences, gradually translating these ideas into the physiological mechanisms of modern contraception. Likewise, by devising ways of convincing women that the unsafe days are those in the middle of the cycle, rather than those during and around menstruation, the effectiveness of the rhythm method could be improved. Local expressions gathered through group discussions could be used in the delivery of messages about methods and their effects, including the negative ones; more acceptance and better understanding could be gained in such a way. In any case, a better understanding of the potential client's perspective would promote the creation of more appropriate family planning programs.

References

1. L. A. Sobrevilla and N. P. Mostajo, "Los Métodos Naturales en los Programas de Planificación Familiar del Perú," *Cuadernos CNP*, No. 13, Consejo Nacional de Población, Lima, 1985; and L. A. Sobrevilla, E. Alcantara and E. Gartner, *Nacer y Morir en la Pobreza: Salud y Planificación Familiar en los Pueblos Jóvenes de Lima*, Universidad Peruana Cayetano Heredia, Instituto de Estudios de Población, Betaprint S. R. L. Ediciones, Lima, 1987.

2. R. J. Lapham and W. P. Mauldin, "Family Planning Program Effort and Birthrate Decline in Developing Countries," *International Family Planning Perspectives*, **10**:109, 1984.

3. J. L. Herrera Miranda et al., *Evaluación de los Servicios de Salud Materno Infantil y Planificación Familiar en Cinco Regiones de Salud*, Consejo Nacional de Población, Ministerio de Salud, Lima, 1985.

4. "Cinco Preguntas a Dr. Carlos Zuzunaga Florez: Lo Poblacional desde una Perspectiva Humanista," interview in *Lugar de Encuentro*, (bulletin of Apoyo al Sector Privado en Planificación Familiar), Año 2, No. 1, Lima, 1988.

5. "Mensajes y Acción," editorial in *AMIDEP* (bulletin of the Asociación Multidisciplinaria de Investigación y Docencia en Población), No. 53, Lima, 1987.

6. C. F. Westoff, "The Potential Demand for Family Planning: A New Measure of Unmet Need and Estimates for Five Latin American Countries," *International Family Planning Perspectives*, **14**:45, 1988.

7. J. Knodel, N. Havanon and A. Pramualratana, "Fertility Transition in Thailand: A Qualitative Analysis," *Population and Development Review*, **2**:297, 1984.

8. E. Folch-Lyon, L. de la Macorra and S. B. Schearer, "Focus Group and Survey Research on Family Planning in Mexico," *Studies in Family Planning*, **12**:409, 1981 (special issue); and H. Suyono et al., "Family Planning in Urban Indonesia: Findings from Focus Group Research," *Studies in Family Planning*, **12**:409, 1981 (special issue).

9. J. Mayone Stycos, "Actitudes de los Estudiantes y Docentes Costarricenses Frente al Sexo y la Educación Demográfica," *Perspectivas Internacionales en Planificación Familiar*, Número Especial de 1987, p. 1.

10. A. Shrestha, J. Stoeckel and J. Man Tuladhar, "Factors Related to Non-use of Contraception Among Couples with an Unmet Need for Family Planning in Nepal," study conducted by New Era, Demographic and Health Surveys and Institute for Research Development/Westinghouse, 1988.

11. Instituto Nacional de Estadística, *Encuesta Demográfica y de Salud Familiar (ENDES 1986), Informe General*, Consejo Nacional de Población, Lima, 1988.

12. A. Fort, "Encuesta sobre Planificación Familiar en la Zona Rural de Loreto," *Cuadernos CNP*, No. 12, Consejo Nacional de Población, Lima, 1985; ——, "Conocimientos y Necesidades de Planificación Familiar en Iquitos," study conducted for the Pan American Health Organization, Lima, 1986; and ——, "Evaluación Preliminar de los Servicios de Planificación Familiar en la Ciudad del Cusco," unpublished document, 1987.

Resumen

Sesiones de grupo focal realizadas en 1986 y 1987 con peruanas que residían en dos ciudades lejos de la capital revelaron que la baja condición de la mujer en la sociedad y su ignorancia de la fisiología de la reproducción conspiran contra el control de su fecundidad. Entre los factores que contribuyen a esta circunstancia, figuran el que a las mujeres no se les ocurra planificar el futuro y un programa de planificación familiar poco desarrollado. Si bien se ha registrado un cierto aumento en el uso de métodos modernos, casi la mitad de las usuarias recurren a métodos tradicionales, como el ritmo, que con frecuencia se emplea al revés y resulta, por ende, ineficaz. Según estudios anteriores, lo que más disuadia a las mujeres de usar métodos modernos era el temor a los efectos secundarios. Sin embargo, los debates en los grupos focales revelaron que las que usaban métodos modernos temían tanto los efectos perniciosos

como las que no. Más aún, las que usaban métodos anticonceptivos modernos recurrían a ellos porque tenían más miedo de quedar nuevamente embarazadas que de enfermarse o morir.

Si bien las encuestas habían indicado que en el Perú el número ideal de hijos era tres, los grupos mostraron que estimula a la mujer a tener más hijos que lo que considera ideal. La mortalidad infantil continúa siendo elevada. Las parejas raramente, si acaso, tratan el tema de la cantidad de hijos al poco tiempo de casarse. Las mujeres preferirían aplazar el primer embarazo hasta los dos o tres años de casadas, pero sienten que deben tener hijos de inmediato para complacer a sus maridos. Las esposas temen también la desaprobación del hombre si usan métodos anticonceptivos evidentes, ya que la planificación familiar se asocia con la infidelidad, y muchos hijos con la fidelidad. La planificación familiar se utiliza, entonces, más para limitar que para espaciar los hijos.

Résumé

En 1986 et 1987, des sessions de groupes de discussion dirigée ont été conduits dans deux villes péruviennes fort éloignées de la capitale. Les participantes ont permis de mettre en évidence jusqu'à quel point la condition inférieure dans laquelle les femmes sont reléguées, autant que leur méconnaissance de la physiologie des organes reproductifs, les empêchent de maîtriser leur fécondité. Entrent également en ligne de compte, d'une part, leur incapacité à prévoir pour l'avenir et, d'autre part, un programme national de planification familiale de faible envergure. Même si l'on a pu constater qu'un plus grand nombre de Péruviennes se servaient de méthodes contraceptives modernes, il n'en reste pas moins que pratiquement la moitié des femmes contraceptées s'en tiennent actuellement aux méthodes plus classiques comme la méthode Ogino, d'ailleurs souvent utilisée à l'envers et, de ce fait, inefficace. Des études antérieures ont fait apparaître que c'est essentiellement par peur des effets secondaires que les femmes n'utilisaient pas de contraceptifs modernes. Les débats menés au cours des groupes de discussion ont toutefois fait ressortir que celles qui utilisant des méthodes modernes redoutaient tout autant les effets nocifs que celles qui n'utilisaient pas ce type de contraception. En fait, si ces femmes avaient recours aux méthodes modernes, c'étaient bien parce qu'elles redoutaient plus encore une nouvelle grossesse qu'une maladie ou que même la mort.

Des enquêtes ont montré que les Péruviens désiraient, dans l'idéal, avoir trois enfants; les groupes de discussion ont pourtant permis de dévoiler les conditions qui encouragent les femmes à avoir plus d'enfants qu'elles n'en désirent vraiment. La mortalité infantile est, par exemple, fort élevée et les jeunes couples discutent rarement du nombre d'enfants qu'ils souhaitent avoir (si tant est qu'ils en discutent). Les femmes préfèreraient bien n'avoir leur première grossesse que deux ou trois ans après le mariage, mais pensent que pour plaire à leur époux elles se doivent d'avoir des enfants immédiatement. Elles craignent par ailleurs que leur mari n'accepte pas qu'elles aient recours à une méthode anticonceptionnelle bien précise car la contraception est souvent associée à l'infidélité, alors qu'une famille nombreuse est, au contraire, associée à la fidélité. Dans un tel contexte, la planification familiale sera avant tout un moyen de limiter, plutôt que d'espacer, les naissances.

"Male Knowledge, Use and Attitudes . . ."

(Continued from page 87)

por ciento de los hombres conocía al menos un método anticonceptivo moderno, mientras que el 90 por ciento identificaba siquiera un método moderno o tradicional. El 25 por ciento podía mencionar un método tradicional o moderno sin que se le diera descripción previa. Casi el 19 por ciento de los hombres había utilizado alguna vez un método moderno, fundamentalmente preservativos. Sin embargo, el empleo de estos parecía más estrechamente relacionado con el contacto con prostitutas y la prevención de enfermedades que con el control de la natalidad. Entre los no usuarios, el 64 por ciento aseveró que quizás utilizaría algún método moderno más adelante.

En el caso de los padres de familia, uno de cada cuatro encuestados afirmó que no deseaba tener más hijos, proporción que ascendía con la prole. El número ideal de hijos resultó sorprendentemente bajo: cuatro, en el caso de los que tenían menos de esa cifra. El 80 por ciento de los hombres manifestó deseos de recibir mayor información acerca de la planificación familiar y un 76 por ciento querían la información para sus mujeres. De los 124 que explicaron su renuencia a practicar la planificación familiar, el 31 por ciento alegó que era nociva para la salud y un 12 por ciento que iba contra sus creencias religiosas, pero la mayoría adujo razones personales. Si bien los participantes en los cuatro grupos focales evidenciaron, en general, una actitud muy positiva ante la planificación familiar, resultó obvio que muchos de ellos tenían una idea errónea de la anticoncepción. Gran cantidad de los varones manifestó temores respecto de la seguridad y permanencia de los métodos modernos. Además, algunos creían que si las mujeres usaban anticonceptivos podrían llegar a serles infieles.

Résumé

Une enquête sur les connaissances, les attitudes et les pratiques effectuée auprès de 603 hommes au Burkina Faso a révélé que 75 pour cent des hommes connaissaient au moins une méthode moderne de contraception si une brève description de la méthode les mettait sur la voie, et que 90 pour cent reconnaissaient au moins une méthode moderne aditionnelle de contraception. Vingt-cinq pour cent des hommes pouvaient citer au moins une méthode moderne ou traditionnelle sans être mis sur la voie. Près de 19 pour cent des hommes avaient utilisé une méthode moderne, essentiellement le préservatif, à un moment donné; toutefois, l'utilisation du préservatif était associée à l'idée de prostitution et de prévention des maladies plus qu'à celle de contrôle des naissances. Parmi les non-utilisateurs, 64 pour cent ont dit qu'ils utiliseraient peut-être une méthode moderne à l'avenir.

Un interrogé sur quatre ayant des enfants disait qu'il n'en désirait plus et cette proportion augmentait au fur et à mesure qu'augmentait le nombre d'enfants. La taille optimale de la famille était étonnament basse, de quatre pour ceux qui n'avaient pas encore atteint ce nombre. Quatre-vingt pour cent ont dit qu'ils souhaitaient avoir plus d'informations sur le planning familial et 76 pour cent ont dit qu'ils souhaitaient que ces informations soient données à leurs épouses. Sur les 124 hommes qui ont donné des raisons de ne pas vouloir utiliser le planning familial, 31 pour cent ont dit qu'il était mauvais pour la santé et 12 pour cent ont dit qu'il était contraire à leur religion, mais la plupart ont cité des raisons personnelles. Des hommes qui participaient à quatre groupes spéciaux de discussion étaient manifestement mal informés et nombre d'hommes ont exprimé la crainte que les méthodes modernes soient peu sûres ou aient des effets permanents. En outre, dans l'esprit de certains hommes, l'utilisation de contraceptifs par les femmes risquait d'en faire des épouses moins fidèles.

Special Report

The MEXFAM Community Doctors Project: An Innovative Service Delivery Strategy

By Humberto Arango

Project Background

In Mexico, as in many Latin American countries, rapid population growth and the widespread migration from rural areas to urban centers have given rise to large slums surrounding most cities. In spite of the considerable efforts made by the Mexican government, many of these areas lack basic health services—including family planning—or offer only insufficient services at best. Equally deprived of medical services but less visible are small rural communities. Private physicians have tended to locate in urban areas; in fact, 75 percent of practicing physicians are concentrated in 16 urban centers.[1]

The family planning services that have been available in rural or poor urban areas have traditionally involved either clinics or community-based distribution systems. Either way, such projects have proved to be expensive and to require heavy subsidies for the duration since they can seldom achieve self-sufficiency. Most nongovernmental family planning programs, for example, were initiated in Latin America during the 1960s and all of them still depend, to some degree, on international funds to deliver services to poor clients.

In 1984, the Mexican Foundation for Family Planning (MEXFAM), which is the Mexican International Planned Parenthood Federation (IPPF) affiliate, found itself with a large network of mostly urban clinics showing varying degrees of effectiveness. Virtually all of them required high start-up and maintenance costs because the physician and other staff members were salaried personnel. In addition, MEXFAM's clinics were in locations where they were increasingly competing with government-run family planning centers. Consequently, the association decided to close most of the less effective clinics and begin a search for a new service model that would contribute to the expansion of family planning activities.

Initially, MEXFAM attempted to transfer clinic doctors to underserved communities, opening part-time family planning offices—sometimes in the homes of community residents—where the physician would see patients for a few hours on certain days of the week. Thus, most doctors served more than one area. The experiment proved to be short-lived. When the project's poor performance was analyzed, however, two elements emerged as being directly related to success: the community and the support it provides the doctor, and the doctor's personal character.

With this information in hand, the MEXFAM staff again assessed family planning service delivery in Mexico. The foundation, as with any health care organization in Mexico, was well aware of the sizable reservoir of unemployed Mexican physicians. Mexico has a large number of medical schools for a Latin American nation (64, compared with, for example, 12 in Argentina, 38 in Brazil and 11 in Colombia[2]). They produce more physicians than the country has been able to effectively incorporate into the economy, and several studies have shown that high levels of unemployment and underemployment exist among Mexico's medical school graduates. For example, estimates from a 1986 survey of the doctors living in 16 cities indicate that 7.5 percent of the available physicians are unemployed and 9.4 percent are underemployed.[3]

As a result, in part, of university reforms that broadened access to higher education in Mexico, many of these doctors come from lower socioeconomic backgrounds and are familiar with poor rural and urban neighborhoods. MEXFAM saw these unemployed doctors as an opportunity to develop a better family planning service strategy that would be more cost-effective, place greater emphasis on quality of care, meet the existing needs of low-income areas and provide physicians with the chance to use their training where it is most needed. This strategy became the Community Doctors Project.

Establishing a Center

MEXFAM's objective was to develop a more effective service delivery model that would require a lower initial investment than the traditional approaches, achieve self-sufficiency in a reasonable amount of time and involve the community to such an extent that its members would eventually share responsibility for the project. Since in economically depressed areas, in particular, people make visit's to their doctors primarily when their children become ill, the Community Doctors Project was envisioned as an integrated health care model that would allow the doctor to promote family planning and overall maternal and child health at such visits.

Marginal urban areas and small towns with populations of approximately 20,000 are considered potential sites for the Community Doctors Project. Other criteria are a low level of socioeconomic development, high maternal and child morbidity rates, a lack of effective health services, low contraceptive prevalence rates, expressed support from community leaders and a capability within the community to pay moderate fees. (In many areas, services are provided regardless of ability to pay, although some fee is always requested.)

Once a prospective area is selected, MEXFAM hires a social worker to conduct a basic feasibility study. The study assesses the community's overall level of socioeco-

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nomic development (based on availability and quality of public services such as transportation and communication networks, community institutions and basic medical services and supplies). Using a sample of the population, the social worker also assesses contraceptive prevalence rates and determines the approximate size of the community to be served (hopefully, an area large enough to generate a demand for 20 to 30 consultations per day). If the area meets all the requirements, a physician is selected from the roster of candidates kept by MEXFAM.

In late 1985, MEXFAM began recruiting physicians by advertising in two major Mexican newspapers, *El Universal* and *Excelsior*.[4] According to Alfonso López Juárez, executive director of MEXFAM, approximately 300 physicians responded to the ads.[5] When these applicants were informed of the position they would be expected to fill, about half of them left. The remaining 150 doctors began training for the project but approximately 100 dropped out during training. The 50 who were left visited the areas where they would be working and just one withdrew at that time. The rest of the doctors made up the basic group with which MEXFAM launched its Community Doctors Project.

Once a doctor is assigned to a community, the doctor and the social worker, assisted by MEXFAM, assess the amount of initial support in the community for the project and the ability of residents to pay for services by interviewing approximately 60 persons in leadership positions (political leaders, teachers, priests and others accepted as leaders by the community). If little community support seems apparent at the beginning, efforts are made to generate it. The project staff contacts organizations that are already in place (e.g., community centers, mothers' clubs and health centers), and includes them in the project's start-up activities, emphasizing MEXFAM's goal that the community will assist in establishing the physician's practice and that the practice will eventually become self-sufficient. In the very new settlements that have yet to form organizations, the community is encouraged to form health committees to support the program. Ideally, the physicians' offices are located in busy areas (near markets, parks, transit depots or commercial areas) where they are clearly identified with MEXFAM's logo and an indication that they are family medical centers.

A coordinator, a network of promoters and the community doctor form the team that runs each center. The coordinator plays an integral part in the project. Generally, she is a young woman (hopefully from the community itself) who has received basic training in social work, community development or basic health care either in the last two years of technical secondary school or through one of the government programs that have been set up in small communities and marginal urban areas throughout Mexico (i.e., programs organized by the paragovernmental Institute for the Integrated Development of the Family or by the Mexican Health Ministry). The coordinator identifies and then contacts community leaders and local organizations to promote the concept of a center to provide basic health care and family planning. She also encourages their participation in the center's health education and prevention activities that are conducted in the schools and community centers. Initially, MEXFAM pays the coordinator a nominal fee based on targets set for new acceptors, educational activities, publicity and distribution of contraceptives (condoms and foam supplied free by the Mexican Ministry of Health). After a start-up period, successful coordinators can be hired full-time. Despite the limited incentives, MEXFAM has had no problems attracting candidates for this position; many of these women are anxious to be involved in developing their community, regardless of financial reward.

The coordinator also selects and trains a network of promoters who visit homes, invite people to the center's events, teach basic health care and initiate other activities for the benefit of the community. In addition, the promoters distribute contraceptives, refer new users to the community doctor's office and hand out coupons that can be given to the doctor to obtain the first family planning consultation free.

The community doctor is responsible for the quality of services and for the community activities that the center organizes. The authority and prestige that his social status confer help to motivate the community leaders and the community at large to practice family planning and to participate in the center's activities. MEXFAM trains each community doctor in working with the community and in organizing education campaigns, including giving lectures in schools. In addition to receiving instruction on contraceptive methods and IUD insertion techniques, the physicians are also given basic administrative training so that they can manage the center that will eventually become their own practice.

The community doctor signs an agreement, not a contract, since he is not a MEXFAM employee. Under this agreement, MEXFAM pays rent for the first year if no suitable space is offered free of charge. MEXFAM also lends office furniture and medical equipment to the community doctor; paints and decorates the center (all centers are painted in yellow and blue, colors selected to identify the program); and supplies educational materials and contraceptives at cost. To become well-known in the community, the new doctor is encouraged to visit homes to promote the center, conduct a health census of the families in the community and develop a family health registry for his general practice.

For the first two years of a center's operation, MEXFAM helps the doctor build a stable patient base by guaranteeing a monthly income that is tied to the number of first-time family planning acceptors he sees. The doctor is paid by MEXFAM for a minimum of the equivalent of 120 first-time family planning visits during the first month of operation. (Giving lectures and adding families to the community health registry are also included in this figure, with lectures counting as two first-time family planning visits.) This amount is reduced by five for each successive month until payments stop altogether at the end of two years. By that time, the doctor is expected to have developed a sufficient client base to support the practice on his own. MEXFAM sets no maximum number of first-time family planning visits for which it will pay, provided that a contraceptive method (except for condoms) is prescribed during one. If a community doctor has given 400 consultations for three consecutive months, MEXFAM considers his practice to be self-sustaining, whether the two-year period has elapsed or not. The community doctor is then entitled to purchase the office and medical equipment at 50 percent of cost. The doctor who has reached self-sufficiency continues his relationship with MEXFAM through an agreement to become an "affiliated doctor," under which he continues to receive training and contraceptives from MEXFAM.

The doctor can also make house calls and if a family planning method is prescribed during one, MEXFAM pays for the visit at a higher rate than a regular first-time visit at the center, which is approximately one dollar. The amount that doctors charge for general medical consultations cannot exceed twice that established for first-time family planning visits. The community doctor can also further his income from MEXFAM through delivering talks and lectures in schools or at community meetings and expanding the family health registry of the community. Since the community doctor is not a MEXFAM employee, he is also free to conduct any other type of medical work (e.g., laboratory tests, operations and hospital work), but the fees he charges must be in line with the levels set by MEXFAM. Moreover, should a doctor wish to hire additional personnel (such as a nurse or secretary), he must pay their salaries himself.

Supervision and feedback between MEXFAM and the network of centers occur through visits to the community doctor's office approximately twice a month by a MEXFAM program coordinator who oversees a minimum of three centers. Also, a regional coordinator (responsible for at least 10 programs) visits selected community doctors once a month; in turn, the regional coordinator is supervised by the program director and other officers from MEXFAM's central offices in Mexico City.

Project Results

In March of 1988 and April of 1989, the author and other representatives from donor agencies visited several centers established through the Community Doctors Project. At four specific centers visited both times, we were able to see how the program had progressed over the year. Two of these centers were in the marginal areas of San Luis Potosi, a city of 550,000 inhabitants, and the other two were set up in small towns of approximately 20,000 inhabitants. The four physicians at the centers had started work as community doctors simultaneously—they received similar training, facilities, equipment and guidelines for the functioning of the center and for their work with other personnel and with the community. By our return a year later, the success of each of the doctors was roughly what we had expected.

Juana Raquel Muñoz worked in one of the small towns. At the first visit, we encountered an office decorated with typical family planning posters and medical diplomas; books and photos of the doctors' children were displayed on her desk. The office was characterized by a general feeling of professionalism and order, and we saw that patients responded positively to her gentleness. Muñoz had decided to hire a secretary, whom she paid herself, although at the time of our first visit, her own income was far from being certain. Muñoz was known to the community since she had previously worked in the local government health center.

A second doctor, Mario Rodríguez, was working with his center's coordinator to develop a plan for home visits and other activities. He seemed highly motivated and had invited a number of women from the community to his office to discuss their children's most common medical problems. Rodríguez had put up posters and area maps on the walls. He spent a good portion of his time visiting the community and its leaders and had, in a short period, established several important contacts.

The third physician, by contrast, seemed withdrawn and cold. At the time of our first visit, the arrangement of the office was still not finished, and there were no personal effects in evidence. In our conversation, this doctor responded satisfactorily although perfunctorily to all our questions about her experience on the project and its progress. She had left the establishment of community relations mostly to the coordinator and showed little interest in getting involved herself.

In the case of the fourth doctor, the coordinator had developed a plan of community work on her own and the doctor had merely approved it. Although the doctor did visit several places in the community while carrying out the feasibility study, he had not returned to them after the center's establishment. The coordinator had informed him of the initial contacts she had made with potential promoters, but he had yet to meet with any of them.

A year later, the two doctors who were unenthusiastic and little involved had left and, in accordance with project policy, had been replaced with new doctors who were beginning their ground-laying work in the community. The other two doctors, Muñoz and Rodríguez, were running effective medical centers in their communities. Muñoz had rented a big house, had installed her office and waiting room in the lobby and front rooms and had set up living quarters in the back. She was also constructing a space in her house to serve as an emergency clinic and was intending to start an obstetrics practice as well. At that time, Muñoz was seeing between 20 and 30 patients per day and giving lectures at the school and in the community center. She was also considering hiring another physician for a few hours a day to fill in for her while she was out of the office working in the community.

Rodríguez had also built up his practice to around 30 patients per day, having hired another doctor to see patients in the office while he was out in the community and making house calls. The maps on the wall showing the types of center activities coded in different colors had multiplied. Rodríguez displayed a sense of pride in the work that had been accomplished over the past year, and he said that he planned to stay on for at least several more years.

By the beginning of 1989, 150 community doctors were working in 30 of Mexico's 32 states. Initially supported only by MEXFAM and IPPF funds, the project now enjoys the support of additional donors including the Canadian International Development Agency, the U.S. Agency for International Development, John Snow Inc. and the MacArthur Foundation. In the three years that the project has been in existence, approximately 30 percent of the community doctors have reached self-sufficiency and have become MEXFAM-affiliated doctors.[6] (MEXFAM continues to supply contraceptives, which are sold by the doctor at a set fee.)

Experience with the project has shown that many doctors leave after serving for a short period; where community involvement has been high, support to bring in and maintain a new doctor is usually high also, ensuring that the center continues despite the change in personnel. Rough overall estimates indicate that in a one-year period, 60 percent of doctors remain in their centers while 40 percent leave.[7]

In some communities, it takes longer than two years for a doctor to become self-sufficient. Nevertheless, the strategy seems to be one of the few being implemented in Latin America that does not require a high initial investment and has at least the possibility of leading to self-sufficiency in a relatively short period. A recent study has examined the economic profile of the typical patient who sees the community doctor. The findings show that the project is reaching its targeted low-income population: For 90 percent of the program's users, the family income is less than 1.5 times the government-established minimum legal salary (U.S. $100 a month).[8]

Project Evaluation

MEXFAM has collected data since the project started in order to evaluate its progress, determine whether or how targets were being met and compare and analyze success rates. A large variation between centers in the number of family planning users emerged early, even among centers located in areas of similar socioeconomic development. In early 1987, an exploratory study conducted by an independent research organization, the Mexican Institute of Social Studies (IMES), came up with specific proposals for improving the project.[9] These hypotheses were subsequently evaluated in a second study,[10] the results of which formed the basis for a project manual with specific guidelines and ideal personnel profiles.[11]

In addition, the IMES conducted a survey of 403 women in three metropolitan areas served by the Community Doctor's Project. Several important findings emerged from this study of user characteristics and opinions about the program.[12] First of all, the program serves predominantly women and children. Sixty-nine percent of the women surveyed had visited a center and 52 percent had taken their children to see the community doctor; however, just 13 percent of the husbands had been to the center. These women tend to be married (78 percent), young (69 percent are under age 29) and homemakers (90 percent). Their level of educational attainment is low—45 percent have completed primary school and just three percent have finished secondary school. When asked why they sought family planning, 39 percent mentioned their economic situation, 22 percent said they wanted to space their pregnancies and 18 percent cited care for the children they already have. The need for family planning in these communities is evident in the proportions who have had more than five pregnancies (15 percent) and one or more abortions and miscarriages (25 percent).

When asked to evaluate the care they had received at the MEXFAM family health center, 41 percent of the women interviewed said they were "highly satisfied" and 49 percent responded that they were "satisfied." The MEXFAM centers were rated "good" by 55 percent of the women; by comparison, three public health institutions each received ratings of "good" by 38 percent, 30 percent and 17 percent of the women, respectively.

The profile of an "ideal physician" that emerged from the IMES evaluation is a doctor with a degree from an accredited medical school, preferably no older than 35; someone interested in community affairs and motivated to help the community; a person willing to work with a team under difficult conditions; and preferably someone who has had some previous experience with family planning. Personal traits such as having an entrepreneurial spirit and an ability both to communicate with patients from marginal areas and to understand their cultural values are also shown to be important elements in achieving success. Women doctors seem to be better accepted since the majority of patients are women and children, who often feel more comfortable seeing female physicians than male physicians. Many of the doctors who applied to MEXFAM were recent graduates. Thus, although these applicants had fewer years of experience overall, they also had very recent experience working in underprivileged communities, since physicians in Mexico must complete one year of work in a rural area as a prerequisite for graduation.

The preliminary study detected a potential conflict between two objectives—achieving family planning targets and conducting preventive and educational activities. The conflict arises because many doctors believe that the educational component of their job takes them away from the medical work they have been trained for. This problem may become more acute once the doctor reaches self-sufficiency and no longer has a coordinator to help promote the center in the community.

Overall, the urban areas have been more responsive to the project than the rural areas, where communities still rely on traditional folk medicine and healers rather than on modern physicians. In addition, the study brought out the importance of having the physician work closely with the coordinator to ensure community acceptance and participation. In general, the doctors expressed satisfaction with their training in contraceptive methods but emphasized the need to be kept up-to-date on general medical information, since they live and work in relatively isolated areas with limited access to the media. The study also indicated that the promoters were dedicating a larger than expected proportion of their time to basic medical care and were interested in receiving more training in that area. In response to the suggestion that a line of basic medicines was needed, the centers began dispensing some commonly used medicines, such as antiparasite preparations.

Health committees or committees of community leaders have proven to be essential in sustaining the center and its activities, particularly in those areas with no preexisting community organizations or in ones showing little interest in supporting the doctor's office. It is equally important to establish clear channels of communication between the committee and the center from the beginning so that respective areas of responsibility, functions and roles remain clear to all parties involved. Committee members have sometimes used the center to derive personal benefits in terms of status or prestige, a practice that can be acceptable as long as it does not interfere with the work of the center. The positive influence of the health committee is especially useful once the community doctor has become self-sufficient and no longer has the promotional help of the other members of the team.

Finally, the evaluation brought out the importance of continuous backing by an already recognized institution. This institutional support needs to continue even after the community doctor has become self-sufficient to increase the likelihood that the doctor will stay. The community would thus be assured the stability of an ongoing center. Furthermore, experience has shown that this type of project requires the support and constant supervision that is only available from an organization with a relatively sophisticated management structure. MEXFAM is currently conducting a study to determine the costs of the Community Doctors Project and of establishing a typical center (results are expected to be available by the end of 1989). This information will allow cost-effectiveness comparisons to be made with other strategies and will determine the feasibility of replicating it in other countries.

Regional Possibilities

Several countries in Latin America have expressed interest in the Community Doctors Project and an informational meeting took place in Guadalajara, Mexico, in September of 1988; 19 Latin American and Caribbean countries were represented. In addition, family planning organizations from Colombia, Costa Rica, Ecuador, Guatemala and Peru have taken steps toward creating similar programs of their own. The replicability of the Community Doctors Project depends to a large extent on whether the program can be adapted to local circumstances. For Mexico, recruiting doctors for the project was relatively easy, since many physicians come from lower socioeconomic backgrounds and do not occupy as elitist a position in society as doctors in most other Latin American countries. As mentioned earlier, although many doctors abandon the project either immediately upon learning of the working conditions or after a short time of involvement, enough Mexican doctors seem to be willing to work in the targeted areas to provide a sufficient pool of candidates. In addition, given the comparatively high number of medical schools and the tendency of graduates to cluster in very few urban centers, there are undoubtedly more unemployed and underemployed doctors in Mexico than in other countries.

An element worth considering in the replicability of this project is whether there is a sponsoring organization capable of providing the necessary back-up in institutional support, logistics and supervision.

(Continued on page 105)

Comment

Women's Status, Education and Family Formation In Sub-Saharan Africa

By Mary M. Kritz and Douglas T. Gurak

In recent years, scholars and policymakers have turned their attention toward the relationship between women's position in society and fertility levels, and, more specifically, toward those dimensions of women's status that have an impact on fertility.[1] To date, most of the research on these issues has focused on Asian countries; however, because cultural and institutional structures and the gender relations they shape vary across regions, this theoretical and empirical work needs to be extended to other regions of the world. This article begins that task by examining women's status and its relation to fertility in Sub-Saharan Africa.

Insights gained from the study of fertility trends in Asian countries can provide a fruitful guide for such an examination. Among Asian women, fertility levels and rates of change appear to vary with the country and the women's status in that country. For example, John Knodel and colleagues argue that the relatively favorable position of Thai women contributed to the rapid fertility decline in that country. Among measures they cite as indicative of the status of Thai women are high rates of labor-force participation, near universal literacy, economic independence and control of family finances, and a relatively high degree of autonomy, as well as comparatively egalitarian spousal relations and the absence of son preference.[2]

On the other hand, as Tim Dyson and Mick Moore observe, fertility levels in northern India remain high in a society characterized by arranged marriages, dowries, early age at marriage, social segregation of the sexes, limited spousal communication and son preference.[3] They add that by restricting women's physical movement, limiting their education and failing to provide them with social support for birth control use, the patriarchal kinship system in northern India encourages women to produce male heirs and constrains them from seeking out family planning services. Scholars studying the status of women in other Asian countries have looked at similar factors and how they shape fertility.[4]

Women's Status in Sub-Saharan Africa

What do we know about spousal relations, female autonomy, age at marriage and other dimensions of women's position in Sub-Saharan countries? How can we measure changes in women's status? Are women's roles changing, and if so, what are the implications of such changes for fertility? Given the dearth of available data, these questions cannot be fully addressed; what we can do is set forth some preliminary answers.

The body of research on fertility and its proximate determinants in Sub-Saharan Africa tends to focus on cultural, socioeconomic and demographic factors and shows that nuptiality patterns, kinship systems and fertility patterns differ considerably across the region.[5] However, these studies have found that overall, the demand for children remains strong in Sub-Saharan countries, and no apparent reductions in fertility have yet taken place. Moreover, they suggest that the pace of fertility decline in Africa is likely to be slower than it was in Southeast Asia or in Latin America.

World Fertility Survey (WFS) data for African countries indicate that only small minorities of African women want to avoid further childbearing, a fact borne out by low levels of contraceptive prevalence throughout the region.[6] Most researchers would agree with Odile Frank's observation that "because of high mortality in a hostile environment, African social patterns and reproductive behaviors came to settle at an equilibrium that traded-off the very highest fertility for rudimentary supports to child survival. . . ."[7] Indeed, most nuptiality patterns, reproductive behaviors and other social practices associated with family formation and reproduction in Sub-Saharan Africa can be interpreted as either maximizing fertility or minimizing mortality and morbidity.[8]

Despite their contributions, none of these studies have looked explicitly at women's status. Further, there is little agreement about what the position of women in Sub-Saharan Africa is. A number of scholars argue that the economic and social status of Sub-Saharan women is relatively high compared with that of women in southern or western Asia.[9] For example, John Casterline and colleagues note that "by many criteria, such as schooling participation, economic independence and freedom to circulate outside the familial setting, the status of women in Sub-Saharan Africa is higher than that of women in North Africa, West Asia and South Asia. . . ."[10]

Women's economic independence in Sub-Saharan countries derives from the traditional practice of wives receiving land from their husbands' lineage to grow cassava and other subsistence crops for feeding the family. If women are able to produce a surplus, they are allowed to sell it in the marketplace and to keep the income. Further, many women, particularly those in western Africa, engage in trade and thereby earn additional income for family expenditures or for personal use. These opportunities give African women a degree of economic independence, access to

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resources and autonomy of movement and decision-making that are generally not available to women who reside in rural areas of Asia.*

On the other hand, African women are believed to have less autonomy than most Asian women in reproductive matters.[11] Scholars who claim that women's status in Africa is poor focus on the patriarchal social structure and the extent to which this structure allows men to control both women's production and reproduction.[12] Suellen Huntington, for example, argues that although women in traditional African societies are allowed mobility and have the right to earn some money, "men control women and women's production through [women's] subordination in marriage."[13]

Under the traditional African family system, the survival and maintenance of the lineage takes priority over the conjugal bond. When they accept a bridewealth payment, the bride and her family agree to transfer reproductive rights to the husband and his lineage. If divorce or separation occurs, the wife is obliged to return the bridewealth payment and leave her children with their father. Findings from the WFS indicate that large numbers of African women failed to respond to the survey question on the number of children desired;[14] this failure is consistent with a kinship system in which family-size decisions are made by the husband and his lineage. However, the costs of raising children are sustained not by the husband, but by the wife or by other women to whom the children are fostered out. Thus, husbands benefit from children's labor but bear few of the costs of their rearing, and so have little incentive to reduce fertility; women bear most of the costs of children, but do not see family-size decisions as one of their basic rights.

Although traditional social structures prevail throughout Sub-Saharan Africa, creating a high demand for children, these structures may be changing and such changes may affect the position of women in society. For example, a study of the rural family in southern Cameroon found declines in bridewealth payments, widow inheritance and polygyny and increases in age at marriage.[15] In addition, the study revealed that over the past two decades, the state has played a significant role in promoting change by providing mass education, promoting legal rather than traditional marriages and instituting legal changes to make it possible for women to keep their children after divorce and to improve the inheritance rights of their children. At the same time, women's economic independence and contribution to family expenses have increased. Similar findings are reported in other parts of the African studies literature.[16]

Africa appears to be a continent undergoing rapid social change while experiencing serious economic difficulties. The problems of the region are well-known—low per capita gross national product, reliance on imports for basic food supplies, poor nutrition and health, and political instability. Although these problems severely constrain development and limit improvements in social well-being, they have not kept the modern world out of the region. Mass education has become well established: Whereas only 38 percent of children of primary school age in Sub-Saharan Africa were attending school in 1960, that proportion had doubled to 77 percent by 1983.[17] Radio, television and film expose people even in remote rural areas to modern ideas. Moreover, urbanization is proceeding rapidly throughout the region, increasing by six percent annually; currently, one-third of the population of Sub-Saharan Africa live in urban areas.[18]

Education and Age at Marriage

One important indicator of women's status in society is their access to education. Education can have a profound impact on the position of women, particularly in strongly patriarchal societies where it allows girls to have a wider social network, new reference groups and greater exposure to the modern world than they might otherwise experience. In addition, exposure to schooling allows girls to be free from parental control for several hours a day and gives them experience in interacting with boys, strangers and authority figures other than their parents.

John Caldwell cites the role of mass education within a country or cultural group as a key factor in changing intergenerational attitudes and economic relationships within the family.[19] He identifies several mechanisms through which such changes take place: The labor that children contribute to the family decreases; the cost of children increases as the need to pay for school fees, clothing, books and other commodities rises; children shift from being producers to being dependents; and Western middle-class values are spread. He also argues that boys and girls often have differential access to educational opportunities; that the modernizing effects of education may be greater for girls than for boys; and that traditional families often fear schooling for girls, because they believe that educated women will be less likely than their uneducated counterparts to accept traditional family relationships.[20]

That education does indeed expose girls to modern ideas was confirmed by Caldwell's review of primary school textbooks in Ghana, Nigeria and Kenya. Caldwell reports that "we found no support for such basic African traditional institutions as polygyny, unstable marriage, the condemnation of sterile women or women who repeatedly lose children, bewitchment, and, most importantly, the attitude that the needs of the family have priority over those of the community."[21]

Knowing how to express ideas and how to ask questions are particularly important skills for girls to have (although they are discouraged from doing both under the traditional system). As educated girls mature, they can continue to use these social skills and to benefit from the social networks formed during the school years. Such tools are cited by John Caldwell as important for improving health, because they give women the ability to decide whether illness requires the attention of health personnel; they enable women to find out how and where to obtain information about health services; and they empower women to take action when necessary.[22] A similar argument could be advanced in the case of fertility: If a woman wishes to limit her family size, at the very least she will need the skills necessary to know how to go about seeking information about birth control and family planning services.

The relationship between education and fertility is strong. A review of WFS data found an inverse relationship between education and fertility in 24 of the 38 countries studied.[23] Fertility levels were invariably lowest among women who had had more than seven years of schooling. However, in nine countries, women with some schooling (4–6 years) had slightly higher fertility levels than those with 1–3 years of schooling.

For education to influence fertility, however, it first has to have some effect on the demand for children. As their amount of education increases, women's views

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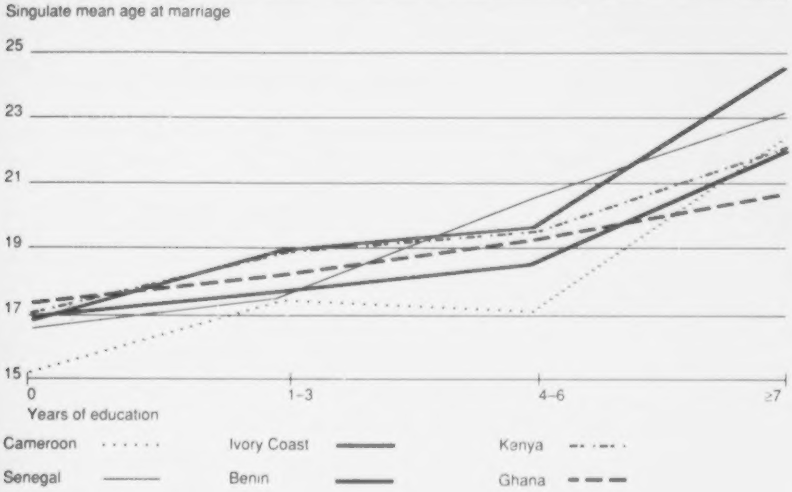
*How these patterns vary across Africa is unclear. In some Islamic areas, such as northern Nigeria, women are secluded and restricted from participating in agricultural or other economic activities outside the family compound; however, many engage in trade by using their children as "sales agents." In eastern and southern Africa, women engage in farming, but do not tend to trade.

Figure 1. Singulate mean age at marriage in six African countries, by education level



Source: See reference 26.

about many things change, including desired family size. Moreover, they are likely to become less willing to enter into traditional marriages or to accept husbands who have less education than they do. As such, education facilitates a shift toward a conjugally oriented relationship in which the husband and wife are "more likely to take into account the interests of the other sex and of the conjugal unit as a whole."[24] While certain traditional customs may continue to be practiced, modern marriages are more likely than traditional unions to be affective and monogamous, and both partners in conjugally oriented marriages are more likely to have similar views on issues such as the desired family size.[25]

Findings from the WFS confirm a strong inverse relationship between the number of children desired and educational level, despite considerable regional variation in the number of children that educated women desire.[26] In general, women in Sub-Saharan Africa who have had seven or more years of schooling want the same number of children as do uneducated Latin American women. And, whereas women in almost all of the Asian and Latin American countries with seven or more years of schooling want fewer than four children, comparable women in Africa want at least five children.

The age at which women marry is another indicator of women's position. I societies characterized by patriarchy, sharp spousal age differences and polygyny, women tend to marry early. Under such a traditional system, the patriarch marries off his daughters early as a means of ensuring their purity and in order to reap the benefits of the bridewealth payment.

That the traditional system in Sub-Saharan Africa does indeed encourage early marriage can be observed in Figure 1, which shows the singulate mean age at marriage among women in selected African countries.* The mean among African women with no education is around 17 or younger. (No country in Latin America, and only Bangladesh in Asia, has such a low singulate mean age at marriage.) On the other hand, educated African women tend to marry later, thereby shortening their period of exposure to pregnancy. Reduced exposure can lead to reduced fertility, unless birth intervals are shortened simultaneously. Findings from the WFS confirm a positive relationship between women's education and age at marriage: Women with seven or more years of schooling generally marry 2–3 years later than do women with 4–6 years of schooling.[27]

Table 1, which shows the proportion of women in given age cohorts from selected African, Latin American and Asian countries who had married by age 20,[28] gives an idea of marriage trends in the different

Table 1. Percentage of women married at age 20, by region and country, according to age cohort

Region and Country	20–24	25–29	30–34	35–39	40–44	45–49
Africa						
Benin	74	71	71	71	64	57
Côte d'Ivoire	79	77	78	77	73	72
Ghana	72	69	74	72	68	71
Kenya	65	70	76	76	74	68
Lesotho	70	67	69	66	68	70
Nigeria	76	80	83	79	70	70
Senegal	77	79	90	90	88	88
Asia						
Bangladesh	93	97	99	98	98	98
Indonesia	72	81	84	86	87	85
Korea	15	18	26	46	70	88
Malaysia	37	43	55	65	72	75
Nepal	86	85	86	82	83	81
Pakistan	72	77	83	87	89	92
Philippines	30	37	41	45	49	46
Sri Lanka	27	34	48	51	57	59
Latin America						
Colombia	42	4	49	52	45	42
Costa Rica	40	35	41	44	42	37
Ecuador	46	46	52	52	54	50
Mexico	47	49	52	53	56	50
Panama	45	51	53	58	59	60
Peru	46	51	56	56	61	57

Source: See reference 27.

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*The singulate mean age at marriage is the average number of years lived before first marriage by women who eventually marry. Since marriage is nearly universal by age 25 throughout Sub-Saharan Africa, the proportion of women who remain single at higher educational levels is negligible and, therefore, does not bias the findings.

regions.* The data indicate a trend toward later marriage among younger women in most Asian and Latin American countries, but not among those in most of the Sub-Saharan nations. Kenya, Nigeria and Senegal are the only African countries that show a trend toward later marriage among younger women. In the seven Sub-Saharan countries included in the table, 65–79 percent of 20–24-year-old women are married by age 20. Even among the oldest cohorts in Latin America, women do not have such high rates of early marriage. On the other hand, early marriage rates among women in some Asian countries (Bangladesh, Indonesia, Nepal and Pakistan) are comparable to, or even higher, than the rates in Africa.

In sum, the relationship between education and family formation in Sub-Saharan Africa is similar to that found in Asia and Latin America, but the level of education required to affect fertility levels appears to be much higher in Africa. Although the specific mechanisms remain to be unraveled, one important path through which education affects fertility is likely to be changes in women's social position. Consequently, it is important to examine the system of gender relations in the society and to assess how such relations might alter the demand for children.

Trends in Educational Equality

One indicator of gender relations is the degree of equality between men and women in educational opportunity. Decreases in educational differentials between husbands and wives are thought to be an important precursor of fertility decline, because greater gender equality is likely to lead to a stronger bond between spouses and to reduce the flow of labor and resources from wives to husbands.[29]

Throughout Sub-Saharan Africa, primary education has expanded rapidly over the past two or three decades. In fact, in recent years, school enrollment is one of the few development indicators to have steadily improved in almost all developing countries. Table 2 shows the proportion of all primary school pupils who were girls in 1960 and in 1983 in 39 Sub-Saharan countries. In 1960, only 34 percent of total primary school enrollees were girls, but by 1983, this proportion had increased to 44 percent. The overall increase in educational gender equality occurred during a period in which school enrollment levels in the region increased more than threefold.

Nevertheless, country rankings on educational equality remained comparable over the 23-year period. For example, Ghana, Senegal, Sierra Leone and Uganda were all very near the means for female school enrollment at both points in time, whereas Chad and the Central African Republic were well below in both years.

As the table illustrates, gender equality in access to primary school varies significantly across the region. In two countries—Botswana and Lesotho—higher proportions of girls than boys were enrolled, reflecting not only an unusual situation for girls, but also that boys probably leave school early and migrate to South Africa to work in the mines and seek other employment. Other countries that had achieved gender parity (48 percent or more of school enrollees were girls) in primary education by 1983 are Congo, Gabon, Kenya, Madagascar, Mauritius, Rwanda, Swaziland, Tanzania and Zimbabwe. With the exception of Gabon and Congo—both western Africa oil exporters—all of these countries are located in southern or eastern Africa. In contrast, the Sub-Saharan countries with greater gender inequality tend to be located in western Africa or in the semiarid countries that border the Sahara. Benin, the Central African Republic, Guinea, Guinea-Bissau and Somalia all recorded a low proportion of females enrolled in 1983. Although Chad, an Islamic country, had the greatest gender inequality in 1983, with only 27 percent of all students being female, this proportion nevertheless represents an improvement of 16 percentage points from the 1960 level of 11 percent.

What implications do these variations in educational equality have for family formation and fertility? Figure 2 (page 104) shows the association between the proportion of secondary school enrollment that was female in 1960 and the proportion of 15–19-year-old women never married in 1980.† Female school enrollment serves as a proxy for women's position and is closely associated with later age at marriage (with a correlation of 0.74, versus one of 0.63 for primary enrollment). The figure shows that countries where women had greater access to education in 1960 had higher proportions of never married young women in 1983. It is likely that countries with the least gender inequality in 1960 had weaker patriarchal structures to begin with and that these measures are proxies for other social processes that would also favor a later age at marriage. Although there is a need for additional analyses utilizing independent measures of lineage and other familial structures to estimate more adequately the impact of increasing gender equality on family formation, the present analysis suggests that such improvements do influence the family formation process.

Table 2. Percentage of all primary school enrollees who were female, selected African countries, 1960 and 1983

Country	1960	1983
All	**34**	**44**
Angola	33	46
Benin	28	33
Botswana	59	53
Burkina Faso	29	37
Burundi	24	40
Cameroon	33	46
Central Afr. Repub.	19	35
Chad	11	27
Congo	34	49
Côte d'Ivoire	26	41
Ethiopia	24	38
Gabon	38	49
Gambia	31	38
Ghana	35	44
Guinea	26	32
Guinea-Bissau	30	33
Kenya	32	48
Lesotho	62	58
Liberia	29	40
Madagascar	44	48
Malawi	36	42
Mali	28	37
Mauritania	19	39
Mauritius	47	49
Mozambique	38	43
Niger	30	36
Nigeria	37	42*
Rwanda	32	48
Swaziland	50	50
Senegal	32	40
Sierra Leone	34	41
Somalia	25	36
Sudan	27	41
Tanzania	34	49
Togo	28	39
Uganda	32	43
Zambia	29	40
Zaire	27	43
Zimbabwe	45	48

*1980 data.

Nevertheless, fertility levels in Sub-Saharan countries remain high and stable. We analyzed the change in crude birthrates (CBR) between 1965 and 1984 in 39 African countries and found that the region as a whole experienced a slight decline in the CBR of 0.38 births per 1,000

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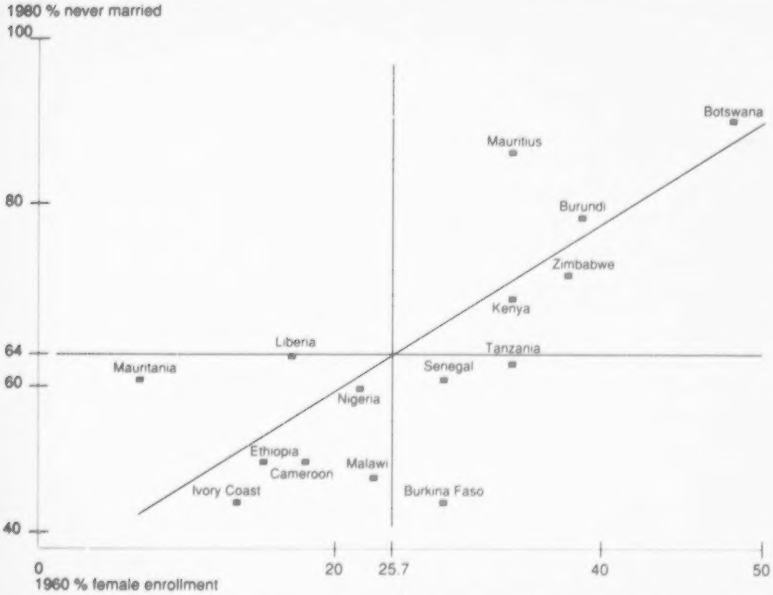
*The reliability of these data are open to question, because of difficulties experienced by older women in recalling their age at marriage. Maternal mortality could also bias the findings for the older age cohorts. In developing countries, women who bear large numbers of children increase their mortality risk. Since such women begin their marriages and childbearing at early ages, the older cohorts would tend to show older ages at marriage because mortality would have removed many high-risk women from the cohort.

†Secondary enrollment data were used, since this measure is fairly consistently related to lower fertility. Graphs were also produced using primary enrollment data, and the patterns are the same, though with smaller correlations.

Figure 2. 1980 percentage of women aged 15–19 who were never married, according to 1960 percentage of all secondary school enrollees who were female, selected African countries



Notes: Pearson correlation = 0.74; horizontal and vertical crosslines are means; regression line, $y = 39.46 + 0.97x$.
Sources: **Marriage data**—The Population Council database; **enrollment data**—see reference 17.

population (unweighted).* However, Mauritius experienced a decline in the CBR of 16, more than twice that of any other country; when it is removed from the analysis, the mean change is actually an increase of 0.03 births. No matter how it is examined, the average CBR change over the 23-year period is nil, although there is considerable variation in the extent and direction of change among the individual countries. For example, Cameroon and the Central African Republic experienced increases of between seven and eight births per 1,000 population, while Botswana and Zimbabwe experienced decreases of a similar magnitude.

The greater the percentage of girls enrolled in secondary school in 1960, however, the greater the decline (or the lesser the increase) in the CBR from 1965 to 1984. This pattern is of interest, because declines in infertility from 1965 to 1984 would normally have led to increases in the crude birthrates of many countries. Moreover, increases in fertility levels frequently occur at the beginning of the demographic transition, which would further diffuse any relationship between gender equality and CBR change. The fact that the correlation between female enrollment percentages and CBR changes is not higher may be attributable to these factors.

Discussion

Traditional cultural beliefs and social structures remain strong throughout Sub-Saharan Africa, but the influence of modernization is leading to rapid social change. Mass education is well established in the region and, in many countries, particularly those in southern and eastern Africa, girls have achieved or are close to parity with boys in access to primary schooling. The joint observation of three factors examined in this article—within-country cohort differentials in family formation; between-country differentials in educational equality and family formation; and the expansion of educational opportunity and CBR change—suggests both some basis for optimism on the demographic front and a need to improve understanding of the dynamic mechanisms linking traditional social structures, rapid change, education and family formation.

Our review of levels and trends in educational gender equality shows sharp differentials across the region. Of particular interest is the fact that contraceptive prevalence is increasing in those countries where there are greater levels of gender equality, particularly in eastern and southern Africa. Recently reported contraceptive prevalence rates in a few such countries are 40 percent in Zimbabwe, 29 percent in Botswana, 17 percent in Kenya and six percent in Lesotho. The spread of contraceptive prevalence does not seem to be limited to these regions of Africa, however: Preliminary findings from Demographic and Health Survey reports show that prevalence rates are on the rise in most urban areas of Africa, particularly among women with a primary or higher level of education.

Our analysis suggests that countries that were more advanced in terms of gender equality in 1960 experienced greater declines in fertility by the 1980s. However, we have not tracked actual change, so this finding may reflect self-selection of countries with tendencies toward equality linked to particular demographic developments. The results also provide some basis for arguing that transformations in the institution of education produce, albeit slowly, changes in the position of women and demographic responses to those changes. That the underlying processes are occurring in most Sub-Saharan countries, and that the within-country differentials are consistent with analyses of between-country differences, supports this line of reasoning.

Nonetheless, our analysis raises more questions than it answers. Very real social changes are under way in Africa, but their implications for fertility remain poorly understood. Clearly, better data are needed to specify more precisely the nature of the underlying processes. The preliminary findings reported here strongly indicate a need for in-depth analysis of the manner in which education, and especially increases in female access to education, influence family formation and fertility. In the short run, to clarify the situation, variables that measure kinship structures, family planning efforts and economic indicators, for example, could be added to the variables used in this article.

From a policy standpoint, governments should continue to strive to achieve universal mass education. The close association between education of girls and improved health and social well-being, including lower fertility, is strong enough to warrant sustained government investments. It is thus troubling that the growth of educational enrollments in Sub-Saharan Africa has not been keeping up with population growth in the 1980s: Whereas the population of children of primary school age grew at an estimated 3.3 percent in 1980–1983, enrollment in primary school grew by only 2.9 percent.*[30] If enrollments continue to stagnate, it is unlikely that equality in girls' and boys' access to education will continue to increase.

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*Crude birthrates were used rather than total fertility rates because they are available for all the countries of the region; consequently, they allow for a broader assessment.

References

1. M. Cain, "Patriarchal Structure and Demographic Change," in *Conference on Women's Position and Demographic Change in the Course of Development*, International Union for the Scientific Study of Population (IUSSP), Liège, Belgium, 1988; P. Caldwell and J. Caldwell, "Kinship Forms, Female Autonomy and Fertility," paper presented at the Rockefeller Foundation Workshop on Women's Status and Fertility, Bellagio, Italy, June 1988; K. O. Mason, "The Impact of Women's Position on Demographic Change During the Course of Development. What Do We Know?" paper presented at the Conference on Women's Position and Demographic Change in the Course of Development, IUSSP, Liège, 1988; C. Oppong, ed., *Sex Roles, Population and Development in West Africa*, James Currey, London, 1987; and C. Safilios-Rothschild, "Socioeconomic Development and the Status of Women in the Third World," Center for Policy Studies Working Paper, No. 112, The Population Council, New York, 1985.

2. J. Knodel, A. Chamratrithirong and N. Debavalya, *Thailand's Reproductive Revolution: Rapid Fertility Decline in a Third World Setting*, University of Wisconsin, Madison, 1987.

3. T. Dyson and M. Moore, "On Kinship Structure, Female Autonomy, and Demographic Behavior in India," *Population and Development Review*, **9**:35, 1983.

4. M. Costello and M. Palabrica-Costello, "Religious Differences in Fertility in Southern Philippines: How Fares the Status of Women and Fertility Model?" paper presented at the Rockefeller Foundation Workshop on Women's Status and Fertility, Bellagio, Italy, June 1988; and L. L. Lim, "The Impact of Islam on Female Status and Fertility in Malaysia," paper presented at the Rockefeller Foundation Workshop on Women's Status and Fertility, Bellagio, Italy, June 1988.

5. J. A. Ebigbola and E. van de Walle, eds., *The Cultural Roots of African Fertility Regimes*, Population Studies Center, University of Pennsylvania and Department of Demography and Social Statistics, Obafemi Awolowo University, Ile-Ife, Nigeria, 1987; O. Frank, "The Demand for Fertility Control in Sub-Saharan Africa," Center for Policy Studies Working Papers, No. 117, The Population Council, New York, 1985; R. Lesthaeghe and J. Surkyn, "Exchange, Production and Reproduction: Women in Sub-Saharan Demographic Regimes," Rockefeller Foundation Workshop on the Status of Women and Fertility, Bellagio, Italy, June 1988; R. Lesthaeghe, B. Kaufmann and D. Meekers, "The Nuptiality Regimes in Sub-Saharan Africa," Interuniversity Programme in Demography Working Paper, Vrije Universiteit, The Netherlands, 1986; R. Lesthaeghe and F. Eelens, "Social Organization and Reproductive Regimes: Lessons from Sub-Saharan Africa and Historical Western Europe," unpublished paper, 1985; J. Ntozi and J. B. Kabera, "Marriage Patterns in Ankole, South-Western Uganda," Population Studies Center Working Paper, No. 16, University of Pennsylvania, Philadelphia, 1988.

6. H. Gille, "Policy Implications," in J. Cleland and J. Hobcraft, eds., *Reproductive Change in Developing Countries: Insights from the World Fertility Survey*, Oxford University, London, 1985.

7. O. Frank, 1985, op. cit. (see reference 5).

8. R. Lesthaeghe and F. Eelens, 1985, op. cit. (see reference 5); and J. Caldwell and P. Caldwell, "The Cultural Content of High Fertility in Sub-Saharan Africa," *Population and Development Review*, **13**:409, 1987.

9. R. Lesthaeghe and J. Surkyn, 1988, op. cit. (see reference 5); and J. Caldwell and P. Caldwell, 1987, op. cit. (see reference 8); P. Caldwell and J. Caldwell, 1988, op. cit. (see reference 1); and T. George, "Polygamy: A Cultural Trait and Maternal and Child Health," *Journal of Advanced Nursing*, **6**:215, 1981.

10. J. B. Casterline, L. Williams and P. McDonald, "The Age Difference Between Spouses: Variations Among Developing Countries," *Population Studies*, **40**:371, 1986.

11. J. Caldwell and P. Caldwell, 1987, op. cit. (see reference 8).

12. M. Cain, 1988, op. cit. (see reference 1); J. Caldwell and P. Caldwell, 1987, op. cit. (see reference 8); N. Folbre, "Patriarchal Social Formations in Zimbabwe," and J. Vock, "Demographic Theories and Women's Reproductive Labor," in S. B. Stichter and J. L. Parpart, eds., *Patriarchy and Class: African Women in the Home and the Workforce*, Westview, Boulder, Colo., 1988.

13. S. Huntington, "Issues in Woman's Role in Economic Development: Critiques and Alternatives," *Journal of Marriage and the Family*, **37**:1007, 1975.

14. H. Gille, 1985, op. cit. (see reference 6).

15. J. I. Guyer, "Family and Farm in Southern Cameroon," African Research Studies, No. 14, Boston University, 1984.

16. L. Beneria and G. Sen, "Accumulation, Reproduction, and Women's Role in Economic Development: Boserup Revisited," *Signs*, **7**:279, 1981; S. B. Stichter and J. L. Parpart, eds., 1988, op. cit. (see reference 12); and J. Vock, 1988, op. cit. (see reference 12).

17. The World Bank, *Education in Sub-Saharan Africa*, Washington, D.C., 1988.

18. Ibid.

19. J. Caldwell, "Mass Education as a Determinant of the Timing of Fertility Decline," *Population and Development Review*, **6**:225, 1980.

20. Ibid.

21. J. Caldwell, "Routes to Low Mortality in Poor Countries," *Population and Development Review*, **12**:171, 1986.

22. Ibid.

23. United Nations Population Division (UNPD), *Education and Fertility: Selected Findings from the World Fertility Survey Data*, Department of International Economic and Social Affairs, New York, 1986; and S. H. Cochrane, *Fertility and Education: What Do We Really Know?* Johns Hopkins University, Baltimore, 1979.

24. K. O. Mason and A. M. Taj, "Women's and Men's Reproductive Goals," *Population and Development Review*, **13**:617, 1987.

25. Ibid.

26. UNPD, 1986, op. cit. (see reference 23).

27. United Nations, *First Marriage: Patterns and Determinants*, Department of International Economic and Social Affairs, New York, 1988.

28. UNPD, *Nuptiality: Selected Findings from the World Fertility Survey Data*, Department of International Economic and Social Affairs, New York, 1986.

29. J. Caldwell, 1980, op. cit. (see reference 19).

30. The World Bank, 1988, op. cit. (see reference 17).

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*The 2.9 percent figure is a weighted average for Sub-Saharan Africa. However, 23 of the 39 countries had enrollment expansions that kept pace with population growth or exceeded it. The weighted average is pulled down by Nigeria, the largest country in the region, which had an enrollment growth rate of only 1.1 percent.

"The MEXFAM Community Doctors . . ."

(Continued from page 99)

Another aspect is the philosophy of the sponsoring organization. The Mexican experience seems to indicate that a legitimate interest in working with the community and an interest in integrating projects with basic community health care, as opposed to providing family planning services alone, are helpful to success. In addition to providing close supervision and support, organizations sponsoring this kind of project will also find that it demands flexible management and quick responses to new opportunities and changing situations.

After three years of experience, the project seems well on the way to being a successful new strategy for integrating family planning with basic health services in low-income areas. Many communities throughout Mexico that had no access to basic health services are now receiving them, and many doctors are productively employed in areas where no physicians were available before the project began. With the prospect of replicating these results in other countries throughout Latin America, the project has even more potential for bringing family planning and general medical services to where they are needed most.

References

1. J. Frenk et al., "Subempleo y desempleo entre médicos de las áreas urbanas de México," *Revista de Salud Pública* Vol. 30, No. 5, 1988, pp. 691–699.

2. *The World of Learning, 1981–1982*, Europa Publications, London, 1981.

3. Ibid.

4. Hector Carrizo, MEXFAM, personal communication, Oct. 6, 1989.

5. "Community Doctors at Work," *JOICFP News*, Feb. 1989, p. 3.

6. Hector Pérez, MEXFAM, personal communication, Mar. 1988.

7. Ibid.

8. L. Romero Aguilar, "Perfil Socioeconómico de los Usuarios de los Consultorios Comunitarios de MEXFAM," MEXFAM, unpublished paper, 1989, Table 7.

9. ——, "Resultados Principales del Estudio Explorativo Sobre el Programa de Médicos Comunitarios," Instituto Mexicano de Estudios Sociales (IMES), unpublished paper, 1987.

10. L. Leñero Otero, "Investigación Evaluativa del Programa de Médicos Comunitarios—Diseño de Investigación," IMES, unpublished paper, May 1987.

11. A. R. Zorilla Olivares, "Manual de Procedimientos para Programas de Médicos Comunitarios de MEXFAM," IMES, unpublished paper, Apr. 1988; and MEXFAM, *Los Médicos Comunitarios*, Mexico City, Sept. 1988.

12. A. R. Zorilla Olivares and E. Fernández Ramírez, "Frecuencia de Datos de la Encuesta de Opinión Sobre el Programa de Médicos Comunitarios," IMES, Mexico City, May, 1988.

Document

Gandhi Addresses the World on Family Planning

On September 20, 1989, the 21st biennial world conference of the International Union for the Scientific Study of Population was opened in New Delhi by Indian Prime Minister Rajiv Gandhi. His speech touched on many themes, including the benefits for the entire world, developed and developing countries alike, of greater efforts at global environmental protection and nuclear disarmament. However, he also discussed in detail some of the shortcomings of the Indian family planning program, and some new steps that the Indian government will be taking to improve the program's effectiveness. The following are selections from his speech.

... In 1951, India became the first country in the world to have an official, government-sponsored family planning program.

The cruel paradox is that in the 10-year period 1971–1981, the growth of population in India was the highest ever recorded in the history of the country. The fall in the death rate has been so dramatically more significant than the fall in our birthrate that, despite an impressive measure of success in spreading our family planning program, the overall growth of population has surged forward. In the current decade, there are some indications [that] the rate of growth of the population [has] moderated, but there is still cause for deep concern and need for a fresh appraisal of everything we have done so far. It is evident that the answer does not lie in applying more of the same. We have to see what changes of emphasis or alternative options are necessary to achieve our objectives. Indeed, if a thorough overhaul is required, we should be prepared for it. It is not enough to have been the world pioneer in family planning. It is essential for us to be also in the forefront of success. So large is India's share of the world population, and so significant is our contribution to world population growth, that it would not be too much of an exaggeration to say that a solution to India's population problem would, in large measure, amount to a solution of the world's population problem.

The single most important lesson that we and the world have learnt in the last four decades is that the answer to population growth does not lie in some simplistic or mechanical attempt to bring declining birthrates in equilibrium with declining death rates. In other words, it is not the activities of the agencies involved in family planning that uniquely determine the outcome of the family planning effort. More realistically, it is the nexus between development and its impact on the people that determines the success or failure of family planning programs. ... That is to say, the mechanics of any family planning program have to be set in the context of the development process as a whole. ...

One probable cause of the surge in population growth in India in the decade 1971–1981 was, perhaps, the relatively low growth rate of the economy in a decade marked by war with Pakistan, two severe droughts and a period of political instability. In the [1980s], there has been a significant upswing in growth rates, taking our average annual growth rate to over five percent in the current VIIth Five-Year Plan Period and poising the economy on the threshold of an even higher rate of growth in the forthcoming VIIIth Five-Year Plan.

The acceleration of economic growth has been accompanied by the launching or fruition of a whole series of programs of direct poverty alleviation and social development. A Minimum Needs Program, rural employment guarantee programs and family asset creation programs for those below the poverty line have resulted in a sensible decrease in absolute and relative levels of poverty. Particular attention has been paid to the education of girls and [to] adult literacy for women. Care has been taken to ... enhance the status of women in our society.

Nutrition programs for infants and children and supplementary feeding for pregnant and lactating mothers have lowered infant mortality and child mortality rates, [as well as] the survival and health of mothers. The primary health care network extends throughout the country, and the Auxiliary Nurse Midwife has become the fulcrum of the health and family welfare delivery system at the grass-roots [level]. Our proudest achievement in recent years has been the universal immunization program. Voluntary organizations and government together have helped women better organize and equip themselves for employment and equitable wages, training and skills formation, self-employment and cooperative activity and greater control over economic assets and income generation. ...

The lesson to be learnt from all this is that family planning programs should be regarded as part of the development process and not as autonomous programs. For developed countries, the lesson to be learnt is that population control objectives cannot be attained by increasing financial assistance for population programs while curtailing development assistance as a whole or restricting the access of developing countries to the markets of the developed. For developing countries, the lesson to be learnt is that there has to be a holistic perception of the development process, of which population policy constitutes but one component, albeit a significant component.

Even a cursory examination of demographic trends in a country as vast and varied as India would indicate that the nature of the demographic problem varies immensely from one part of the country to another. [Over] the decade 1971–1981, population growth rates were as low as 17.5 percent in Tamil Nadu and as high as

33 percent in Rajasthan. The birthrate not only differs significantly between states but also between rural areas and urban areas within states and between states. Thus, the estimated 1987 birthrate in rural India is as low as 21.5 per 1,000 in Kerala and over 39 per 1,000 in Uttar Pradesh. In urban India, West Bengal has a low of 21 per 1,000 and Uttar Pradesh a high of 32 per 1,000. When it comes to such crucial parameters of population policy as fertility rates in different age-groups, we find the variations even more dramatic. For example, [among 15–19-year-olds], the age-specific fertility rate is just 23 per 1,000 in Punjab but right up to 144 per 1,000 in Andhra Pradesh. In the next age-group of 20–24, however, the relatively prosperous and progressive states of Haryana and Punjab jump almost to the top of the ladder, but decline for subsequent age-groups. Similarly, there is no homogeneity to the pattern of death rates or the decline in death rates. In Kerala, the low death rate is comparable to Scandinavian standards, being as low as six per 1,000, as against more than 15 per 1,000 in rural Uttar Pradesh. . . .

It is thus clear that there is no homogeneity in the parameters of population growth in the country as a whole and, therefore, the all-India averages are something of a statistical illusion. There are vast variations from one region to the other, from one state to the other, even [from] one district to another.

The implication is that there is little scope for a uniform all-India population program, whether in regard to actions that operate on the birthrate or in regard to actions that operate on the death rate. Yet, to a very large extent, our family planning programs are more or less uniform throughout the country. Virtually the same package is delivered to the high population growth areas as to the low population growth areas. Only tentative beginnings have been made in area-specific projects, largely concentrating on nuances of infrastructure requirements rather than [on] sociologically significant features. There is little fine-tuning for such critically important factors as variations in the nuptiality pattern or in the average age at marriage. There are virtually no adequate or satisfactory statistics available for differences in regard to the parameters of fertility between different socioeconomic groups or ethnic groups within any given region. The administration of family planning is concentrated too much on the chasing of targets, imposed virtually uniformly throughout the country, rather than [being] based on sensitivity to, or even knowledge of, the differential impact of the same programs on different regional, socioeconomic and ethnic groups. . . .

Uniform norms of planning are not a characteristic only of planning for population control. The practice of [following] uniform norms has been characteristic of our planning in all sectors. In agriculture, we have broken this syndrome by dividing the country into 15 identified agroeconomic zones, so as to tailor agricultural policy to the specific requirements of each of the zones. The time has come for a similar approach to population policy: We need to divide the country into different zones, where the relevant parameters are approximately homogeneous, and adapt policies and programs to the specific characteristics of these different zones. We would need to go further and, within each zone, adapt programs to the specific requirements of different socioeconomic and ethnic groups. Through such a differentiated approach to the demographic diversity of India, we will perhaps succeed in effecting a closer connection between the achievement of program targets and the realization of policy objectives.

We also have to recognize that, despite all our efforts, the family planning program remains essentially an official, government-sponsored program and not a people's program. Successful family planning is such an intensely personal, private matter that government agencies can, at best, contribute to raising awareness, creating an ethos and making available the required supplies, but the success of the program depends upon the personal and private decisions of a myriad individual human beings. What we need is congruence or convergence between the national objective of population stabilization and each couple's perception, especially the woman's perception, of the desired family size. This perception is most influenced by the values and ethos of the local community or neighborhood. How could this be determined monolithically by a central agency? It has to be devised and determined at the grass-roots [level], in the villages, slums and settlements where the people live.

Therefore, there has to be a great degree of decentralization in the implementation of the program so that awareness, ethos and motivation are created more by the local neighborhood than by some remote official agency. We have recently introduced two major constitutional amendment bills in Parliament to revamp, recast and rejuvenate our institutions of local self-government in the villages and urban settlements of India. Through these bills, we hope to assure both democracy at the grass-roots [level] as well as the devolution of powers and the assignment of responsibilities to institutions of local self-government for their own development.

Family welfare is one of the most important subjects being entrusted to these institutions. To the extent that it is the people themselves and their representatives who will determine the contours of the family planning program to be delivered at the community level to each local community, we might expect a far greater degree of responsiveness to diverse local conditions than has been evident so far. By the same token, we might anticipate a far greater measure of success in linking the implementation of programs to specific results in terms of lowering the birthrate and thus the rate of growth of population. The revolution in local self-government bids fair to promote a revolutionary decline in birthrates in India.

. . . At present, a host of different official agencies, operating independently of each other, despite their inevitable interlinkages, are approaching the same target group of women and children with little cooperation and coordination among themselves. The net result is that delivery costs eat up a vast proportion of program resources, and the absence of a holistic approach sharply reduces the impact of these programs. We are attempting to bring all the different programs together in either a single or [a] well-coordinated [multiple] delivery system, and to link that delivery system to our new institutions of local self-government, which provide for the reservation of 30 percent of seats for elected women representatives in all local bodies. Family planning will be an integral element of this system.

The program will thus get tied in at the grass-roots level with the development process as a whole, and be part of a planning and implementation process that intensely involves the people's own participation, including the participation of women and all [of] the weaker sections in our society. I would hazard the prophecy that a delivery system run and supervised by the poor, deprived and largely illiterate people of India will prove far more effective than the paternalistic model of planning, administration and implementation that we have relied upon so far. . . .

DIGEST

Poverty and Underdevelopment, Not Islam, Are Key To High Fertility Rates Found in Muslim Nations

The world's 47 Islamic nations and territories are characterized by high levels of fertility and mortality, rapid rates of population growth and high proportions of young people under age 15. At its current growth rate , the Islamic population of the world will double in size in just one-quarter of a century. However, these trends are not the result of Islam per se, but of the degree of economic underdevelopment seen in these countries. These are some of the conclusions of a recently published, comprehensive analysis of the demographic dynamics of the Muslim world.[1]

Forty countries or territories have clear Muslim majorities,* and another seven with Muslim minorities of 25–49 percent.† Nine additional non-Islamic countries‡ have sizable Muslim minorities, representing less than 25 percent of the total but consisting of at least two million people. (Three of these countries—China, India and the Soviet Union—have roughly 154 million Islamic citizens.) The Islamic nations (virtually all of them developing countries) are dispersed over an exceptionally wide and varied geographic area. Twenty-two are located in the Middle East and account for nearly one-third of all Muslims, and 17 are in Sub-Saharan Africa and include one-quarter of the Islamic population. Four countries in southern Asia contribute roughly another quarter, and three in Southeast Asia contain the remainder, including the inhabitants of the single most populous Islamic nation, Indonesia. Finally, only one European country (Albania) has a predominantly Muslim population. Because of this geographic distribution and the resulting diversity in culture, religious practice, level of socioeconomic development and ethnic background, generalizations about the demography of Islam, although useful, will always be imperfect.

Fertility rates vary considerably within the Muslim world. They are highest in Sub-Saharan Africa, where the total fertility rate (TFR) averages 6.6 lifetime births per woman. Southern Asia and western Asia are the two regions with the next highest TFRs among the Islamic states. The Islamic nations in each of these regions have higher fertility rates than the other developing countries in the area, a pattern different from that found in Sub-Saharan Africa, where the entire region, not just the Islamic states, is characterized by very high fertility. In Southeast Asia, however, another pattern emerges, in which the Islamic states have far lower fertility than the other countries in the region. Finally, Albania's TFR of 3.3 makes that nation's fertility rate the highest in Europe.

Throughout the Islamic world, the *Sharia*—the collection of Islamic laws—governs religious and civil life. With specific reference to social relationships, Islam strongly encourages marriage for those who can afford it, and supports male dominance in society, although "fairness and compassion for women" are also required. According to the author of the report, the degree to which governments identify with Islam varies widely: In Iran and Saudia Arabia, for example, religious courts administering the *Sharia* are the only judicial system, while in states such as Algeria and Pakistan, Islamic law complements secular law. Islam itself does not expressly prohibit the practice of contraception, although several Muslim countries object to abortion and sterilization. Moreover, since Islam lacks a single authority or bureaucracy that dictates or regulates religious law, there can be as many Islamic interpretations on birth control as there are clergy willing to make them.

Of the 18 Islamic countries for which data were available, 39 percent allow sterilization on request, another 39 percent permit the procedure for medical reasons and 22 percent prohibit it outright. Stringent family-size requirements for sterilization are imposed by several Islamic states, such as Iraq (seven children) and Jordan (six children); these limits are far higher than any regulating sterilization in non-Islamic nations. With reference to specific government attitudes toward population growth in their countries, half of the Islamic states are satisfied with their rate of population growth, 40 percent feel that it is too high and 10 percent claim that the present rate of growth is too low (even though five of these countries have annual growth rates of 3.2 percent).

To put the demographic situation of Islamic nations into global perspective, the author of the report compared their demographic variables with those of other developing countries and with the (mostly Western) developed countries (Table 1). As of 1988, the crude birthrate (CBR) among the Islamic nations—42 live births per 1,000 population—was 25 percent higher than that of other developing nations and 221 percent higher than that of the developed nations. This high birthrate reflects an equally high TFR of six lifetime births per woman.

The overall crude death rate in Islamic nations is over one-third higher than that in other developing countries. However, because the death rate has been declining and high fertility has continued, growth rates in the Islamic nations have risen dramatically: Their current overall annual growth rate is 2.8 percent, which means that the world's Islamic population would double in the next 25 years and thus account for a full 23 percent of the world's total population. Islamic nations are now growing 22 percent faster than the rest of the developing world, and 833 percent faster than the developed world.

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*Afghanistan, Albania, Algeria, Bahrain, Bangladesh, Brunei, Chad, Comoros, Djibouti, Egypt, the Gambia, Gaza, Guinea, Indonesia, Iran, Iraq, Jordan, Kuwait, Lebanon, Libya, Maldives, Mali, Mauritania, Morocco, Niger, North Yemen, Oman, Pakistan, Qatar, Saudi Arabia, Senegal, Sierra Leone, Somalia, South Yemen, the Sudan, Syria, Tunisia, Turkey, United Arab Emirates and Western Sahara.

†Burkina Faso, Côte d'Ivoire, Ethiopia, Guinea-Bissau, Malaysia, Nigeria and Tanzania.

‡Cameroon, China, Ghana, India, the Philippines, Thailand, the USSR, Yugoslavia and Zaire.

Two additional factors may also have a pronounced impact on the growth of the Islamic nations. Women throughout the Muslim world generally marry early; fully one-third of all Islamic brides marry before age 20. They also are only half as likely as women in other developing countries to practice contraception, with just 20 percent of currently married Islamic women using a contraceptive method. In addition, 43 percent of the population in the Islamic world is under age 15, compared with 39 percent in the rest of the developing world and 20 percent in the developed world (not including Eastern Europe). Thus, even if fertility rates in Islamic nations were to drop markedly, to near replacement levels, the current age-composition (a consequence of past high fertility) would assure continued population growth halfway into the next century.

Islamic nations are still predominantly rural societies. Overall, 40 percent of the population lives in urban centers, with the Islamic nations of Sub-Saharan Africa, Southeast Asia and southern Asia having especially low proportions of their people living in urban areas. Nonetheless, economic hardship in rural areas has resulted in increasingly large numbers migrating to the very few urban centers, causing severe overcrowding. The report points out that while none of the world's 20 largest cities were located in an Islamic nation in 1970, projections suggest that by 2000, five—Cairo, Dacca, Jakarta, Karachi and Teheran—will be in Islamic countries.

Some of the world's poorest and richest nations are represented in the Islamic world. In his examination of the relationship between socioeconomic factors and demographic variables, the author found that once the effects of an oil-based economy are controlled for, the most important correlate of per capita income is the rate of population growth, followed by the ratio of girls to boys enrolled in secondary school (an indicator of the status of women). Thus, income increases as the rate of population growth slows and the status of women rises. On the other hand, a regression analysis that controlled for religion, region and status of women revealed that changes in per capita income had little impact on fertility. However, an analysis that controlled for religion, per capita income and region showed that women's status accounted for 34 percent of the variation in TFRs within the developing world.

In the analysis of two proximate fertility determinants—contraceptive prevalence and the proportion of women who marry as teenagers—a nation's geographic location (e.g., being in Sub-Saharan Africa) was found to be more important than being Islamic in explaining the fertility differences among developing nations. Outside of Sub-Saharan Africa, however, being an Islamic nation was a more important factor in accounting for national fertility differences. Contraceptive use had by far the strongest association with fertility levels, and after controlling for contraceptive use, the proportion of young women married and geographic region, the author found that no demographic variable unique to Islamic nations accounted for the differences in fertility levels.

The results of another analysis confirmed that women in Islamic countries are especially disadvantaged. On an index of women's status that combined demographic, health, education and labor-force variables for 99 countries, 16 of the 20 lowest scoring countries were Islamic. In addition, only 58 girls for every 100 boys are enrolled in secondary schools in Islamic nations. Again, indicators of the status of women fluctuated more by geographic region than by religious affiliation; thus, the status of women was lowest in the southern Asian nations, regardless of whether or not a given society is predominantly Muslim.

Despite recent declines in mortality and morbidity throughout the Islamic nations, the world's highest mortality levels are still found in predominantly Muslim regions, such as the western coast of Africa south of the Sahara, the Horn of Africa and the southwest corner of the Arabian peninsula. The author broke down mortality indicators according to income level, and found that mortality levels (both infant and maternal) and life expectancy fluctuated according to income in the same pattern for both Islamic and non-Islamic developing countries. He concluded that "the high rates of death in these equatorial Islamic nations have little, if anything, to do with Islam. The reasons are found in poverty and underdevelopment. . . ."

In his discussion of fertility in the Islamic world as a whole, the author again concludes that Islam per se is not responsible for the demographic situation in these countries; the explanation lies in the historical, social and economic development of the nations in today's Islamic world. These nations are clearly in the early stages of fertility transition, a situation the author views as "a consequence of the recency of social and economic development in nearly all Islamic nations." He comments that "there are few demographic patterns in Islamic nations that appear to be a direct result of religious influence," and that nothing specific about the Islamic religion prevents a nation from reaching the level of socioeconomic development that leads to fertility declines. At least for the short term, according to the author, Islamic nations will be hampered by the high growth rates built into the young age structure of their populations. Nevertheless, the social change that usually decreases fertility is already at work in the Islamic world and, although "it may take place slowly, . . . once it begins, it usually gains its own momentum."—*L. Remez*

Table 1. Demographic characteristics of Islamic nations, other developing nations and developed nations, 1988

Characteristic	Islamic	Other developing	Developed*
No.	47	94	25
Avg. population (in millions)	21.2	30.3	31.8
CBR (per 1,000)	42.1	33.6	13.1
CDR (per 1,000)	13.8	10.1	9.4
Rate of natural increase (%)	2.8	2.3	0.3
TFR	6.0	4.5	1.7
Life expectancy (in years)	55	62	75
Infant mortality rate (per 1,000 births)	104	63	10
% of population under age 15	43	39	20
% urban	40	43	74

*Not including the Soviet Union and the nations of Eastern Europe (with the exception of Albania, which is included with the Islamic nations).

Reference

1. J. R. Weeks, "The Demography of Islamic Nations," *Population Bulletin*, Vol. 43, No. 4, Dec. 1988.

In Morocco, Fertility Is Declining and Method Use Rising, DHS Finds

Fertility levels are high but declining in Morocco, and younger women are marrying and bearing children later than did their older counterparts. Between 1980 and 1987, the average number of children desired by Moroccan women fell from 5.0 to 3.7, while the total fertility rate (TFR) dropped from 5.9 to 4.8 births per woman. Currently, 36 percent of married women

DIGEST

practice contraception, and the pill is the most commonly used method. These are some of the highlights of the Enquête Nationale sur la Planification Familiale, la Fécondité et la Santé de la Population au Maroc (ENPS), carried out in 1987 among a sample of 5,982 ever-married women aged 15–49.[1]

The kingdom of Morocco, a North African country of 20.4 million, is surrounded by the Mediterranean Sea and the Atlantic Ocean to the north and west and is bordered by Algeria to the east and Mauritania to the south. Berbers and Arabs constitute the two largest ethnic groups in the country, and Islam is the predominant religion. The vast majority (83 percent) of Moroccan women have had no schooling; urban women are much more likely than rural women to have ever attended school (35 percent vs. four percent).

Marriage and Fertility

In 1987, the median age at marriage among women 25–49 was 18.5 years, up from 17.2 in 1980. On average, women who had attended secondary school married almost five years later than did women who had attended only primary school (24.9 vs. 20.2 years) and seven years later than did those who had had no schooling at all (24.9 vs. 17.8 years). Moreover, urban women married 1.5 years later than did rural women (19.3 years vs. 17.8).

An indication of trends in marriage timing is the proportion of women in different age-groups who are married. In 1987, only 13 percent of women aged 15–19 were married, compared with 60 percent of such women in 1960. And whereas almost all women aged 25–29 in 1960 had married, only 75 percent of such women had done so by 1987. Nevertheless, marriage remains universal in Morocco: By the age of 35, all women have married at least once.

At the time of the survey, the median age at first birth among women 40–49 was about 20, among those 30–39 it was around 21 and among those 25–29 it was slightly more than 22. Whereas 30 percent of 40–44-year-olds had had a first birth before age 18, only 10 percent of 20–24-year-olds had done so. As with age at marriage, educational level appears to be the most important determinant of age at first birth: Women who had attended secondary school had their first birth three years later than did those who had received only a primary education (25.6 vs. 22.7) and five years later than did those who had never been to school (25.6 vs. 20.6).

In the five years preceding the survey, the overall TFR among Moroccan women 15–49 was 4.8 lifetime births per woman, down from a rate of 5.9 per woman in 1975–1979. By 1987, women aged 40–49 had had 7.1 lifetime births, on average, which when compared with the TFR confirms the trend toward lower fertility among younger women. The TFR among rural women aged 15–44 in 1987 was almost double that of comparable urban women (5.9 vs. 3.2 births per woman). Further, the TFR among women with no education was two births higher than that among women with a primary education (5.2 vs. 3.2) and almost three births higher than that among women with a secondary education (5.2 vs. 2.4).

Women who had had a birth in the three years preceding the survey breastfed for 14 months and experienced postpartum amenorrhea for nine months, on average. Although there were no significant age differences in the duration of breastfeeding, the mean duration of breastfeeding among rural women was considerably longer than that among urban women (16 months vs. 11 months). Further, women with no schooling breastfed much longer than did those with a primary education (15 months vs. 10 months) or a secondary education (seven months). Because urban women and educated women breastfeed for shorter periods than do their rural and uneducated counterparts, they experience a shorter period of postpartum amenorrhea and are consequently exposed to the risk of pregnancy sooner. Since the Muslim tradition dictates that women need observe postpartum abstinence for only 40 days, this practice does not have an appreciable impact on exposure to the risk of pregnancy.

Contraceptive Practice

Nearly all ever-married Moroccan women (98 percent) were familiar with at least one contraceptive method: The pill, the IUD and female sterilization were the best-known modern methods (familiar to 97 percent, 79 percent and 77 percent of the women, respectively), followed by the condom (60 percent), injectables (55 percent) and vaginal methods (23 percent). Of the traditional methods, periodic abstinence (52 percent) and withdrawal (47 percent) were the most widely known.

Fifty-seven percent of ever-married women had ever practiced contraception, with 52 percent having used a modern method and 22 percent a traditional method. Half of all ever-married women said they had used the pill at some time, far more than had ever relied on withdrawal, periodic abstinence, the IUD or the condom (11, nine, seven and six percent, respectively). An even smaller proportion of Moroccan women (two percent) had undergone sterilization. Women aged 15–19 were the least likely of any age-group to have ever used any method (29 percent), while those aged 35–39 were the most likely to have done so (65 percent).

In 1987, 36 percent of currently married women were using a method of contraception, up from 19 percent in 1980. Twenty-nine percent of currently married women were using modern methods, while seven percent relied on traditional ones. The pill, used by 23 percent of married women, is by far the most widely used method; fewer than three percent of married women relied on any one of the other methods. Those aged 30–39 were the most likely to be currently using a method (43 percent), and those aged 15–19 were the least likely (17 percent). Moreover, urban women were twice as likely as their rural counterparts to be using a method (52 percent vs. 25 percent); further, women with a secondary education were twice as likely as uneducated women to do so (66 percent vs. 31 percent).

Among married women who had stopped using a method of modern contraception, 26 percent said they had done so because of method failure, 22 percent cited menstrual irregularities and 20 percent reported that contraceptives had adversely affected their sexual relations. About one-third (31 percent) of married women who were not practicing contraception at the time of the survey said that they intended to use a method in the future. Of these, 60 percent said they would use the pill, 12 percent each expected to use the IUD or practice sterilization, five percent planned to use injectables, three percent intended to rely on other modern methods and eight percent believed they would use traditional methods.

The majority of currently married Moroccan women said they did not want to have another child soon: Forty-five percent did not want to bear any more children at all, while 22 percent wanted to wait at least two years until their next birth. The proportion intending to stop childbearing rises with the number of living children, and is higher among urban women (53 percent) than among their rural counterparts (44 percent). However, there is virtually no difference between educated and uneducated women in the proportion who wanted no more children (50 percent vs. 47 percent).

In 1980, currently married women wanted 5.0 children, on average; by 1987, such women wanted a mean of 3.7 children. Urban women wanted slightly fewer children than did rural women (3.3 vs. 4.0). Women who had been to secondary school wanted slightly fewer children than did those with a primary education (2.8 vs. 3.1), and substantially fewer than those with no schooling (2.8 vs. 3.8).

Maternal and Child Health

Overall, 75 percent of women who had had a birth in the five years before the survey received no prenatal care. However, urban women were more likely than rural women to have consulted a health practitioner during their pregnancy (48 percent vs. 17 percent), and women with a secondary education were much more likely than their uneducated counterparts to have done so (73 percent vs. 18 percent). Only 27 percent of all women delivered their babies in a health facility; the remainder delivered at home, assisted either by a traditional birth attendant (58 percent) or by a relative or neighbor (15 percent).

Although infant and child mortality rates have declined over the past 10 years, they remain high: In 1987, the infant mortality rate was 73 deaths per 1,000 live births, while the child mortality rate was 31 deaths per 1,000 children 1–5 years of age. Urban infants were about one and one-half times less likely than their rural counterparts to die, and urban children aged 1–5 were about three times less likely than rural children to do so. The infant mortality rate was 86 deaths per 1,000 births among children born to women with no schooling, compared with a rate of 54 per 1,000 among those whose mothers had a primary education; similarly, the child mortality rate among those born to women with no schooling was 44 deaths per 1,000 children, while the rate among children whose mothers had a primary education was only 12 deaths per 1,000.—*J. Reich*

Reference

1. Ministère de la Santé Publique du Royaume du Maroc, *Enquête Nationale sur la Planification Familiale, la Fécondité et la Santé de la Population au Maroc 1987*, Service des Etudes et de l'Information Sanitaire, Rabat, and Institute for Resource Development/Westinghouse, Columbia, Md., 1989.

Likelihood and Duration of Breastfeeding Have Increased Among Urban Women in Indonesia

Urban women in Indonesia have become more likely to breastfeed their infants in recent years, according to two analyses of survey data. In five urban areas, most women surveyed in 1983 had breastfed their youngest child, but the average duration of breastfeeding ranged widely, from 15 months to 24 months.[1] In 1976, 93 percent of women surveyed in Jakarta had breastfed their last child; in 1983, this proportion was 98 percent. The median duration of breastfeeding increased 38 percent between the two years.[2]

Breastfeeding in Urban Areas

In the 1983 Indonesian Contraceptive Prevalence Survey (CPS), currently married women aged 15–49 whose youngest child was three years of age or less were asked whether and how long they had breastfed that child. (Duration of breastfeeding was measured from the time of birth to the time when the child was completely weaned, regardless of whether supplemental foods were provided.) The survey was restricted to five metropolitan areas—Jakarta (the capital), Medan, Semarang, Surabaya and Ujung Pandang.

The vast majority of women in all five cities reported that they had been breastfeeding their baby at one month postpartum; the proportion ranged from 94 percent in Surabaya to 98 percent in Ujung Pandang. However, by 36 months postpartum, the proportion still breastfeeding varied widely by city: Fewer than 10 percent of women in Medan were still breastfeeding, compared with about 25 percent in Surabaya and around 30 percent in the other cities. The median duration of breastfeeding was shortest in Medan (14.9 months) and longest in Semarang (23.6 months); in Surabaya, Jakarta and Ujung Pandang, the respective durations were 18.1, 19.8 and 20.3 months.

In each of the cities, women were likely to have weaned their children significantly earlier if they had delivered at a clinic rather than at home, if they had been attended by a physician, a midwife or a nurse rather than by a traditional birth attendant, and if they had had more than an elementary education. Additionally, in every city but Medan, women who worked (either at home or outside the home) weaned their child significantly earlier than did those who did not work at all.

A multivariate (proportional hazards) analysis was used to adjust simultaneously for the effects of maternal age, education, workplace, number of live births, place of delivery, type of attendant, family planning knowledge, current pill use, access to family planning information and desire for more children. For each city, after every other factor was controlled for, either type of birth attendant or the place of delivery was significantly related to earlier weaning. In Jakarta, Surabaya and Semarang, women who had had a modern birth attendant weaned their child 1.5, 1.5 and 2.4 times earlier, respectively, than did those who had had a traditional birth attendant. In Ujung Pandang and Medan, those who had delivered in a clinic weaned 1.8 and 2.3 times faster, respectively, than did those who had delivered at home. In all the cities but Medan, mother's education (i.e., elementary or less vs. greater than elementary) was significantly related to the likelihood of earlier weaning (ranging from 1.7 in Jakarta to 2.0 in Ujung Pandang). In Jakarta and Surabaya, women who worked outside the home were also substantially more likely than those who worked at home to wean their child earlier (1.5 times each).

According to the researchers, the finding that duration of breastfeeding is lower among women who deliver in more modern facilities and with better-trained birth attendants has "important policy implications because circumstances surrounding delivery are amenable to intervention." The data indicating that prolonged breastfeeding is still prevalent in most areas bode well for a reversal of the decline, they believe, if programs to promote and teach about breastfeeding are developed and if rooming-in, prenatal and postnatal services are consistently provided.

Breastfeeding in Jakarta

Another study contrasted data from the 1983 Indonesian CPS on breastfeeding practices of Jakarta women with comparable data from the 1976 Indonesia Fertility Survey (IFS). Because the CPS asked women about breastfeeding only if their youngest child was no older than three, the analysis of the 1976 IFS was restricted to data on women who fit that description.

The proportion of women reporting that they had begun breastfeeding after childbirth did not change greatly, rising from 93 percent in 1976 to 98 percent in 1983. The 1983 rate was higher than the 1976 rate in every age, education, parity, work-status and fertility-intention subgroup examined. In both years, the proportion breastfeeding declined between one and six months postpartum at a similar pace. However, between six and 24 months, the proportion declined less rapidly in 1983 than in 1976. Of the women surveyed in 1983, about 45 percent reported that they had still been breastfeeding at 24 months postpartum, compared with about 26 percent of those questioned in 1976.

The median breastfeeding duration in Jakarta increased from 14.4 months in 1976 to 19.8 months in 1983. The change was greatest among women with no education, from 15.7 months in 1976 to 36.0 months in 1983. Among women with more than an elementary education, however, the increase was only 0.9 months. Patterns by the education level of the child's father were similar: Among those with no education, mothers' median breastfeeding duration rose 16.5 months between the two surveys, compared with an increase of 3.8 months among those with more than an elementary education. The median duration of breastfeeding decreased 1.1 months among women who worked at the time of each survey, while it increased 6.5 months among the others. The only other factor that appeared important was the number of living children: The increase in median duration among women with two or fewer children was 4.2 months between the surveys, compared with 10.2 months among those with three or more children.

The investigators point to efforts by Indonesia's National Family Planning Coordinating Board to reduce fertility as a possible explanation for the increase in breastfeeding duration between 1976 and 1983: If women generally breastfeed until their next pregnancy, "fertility reduction might prolong breastfeeding." They note that national programs to promote breastfeeding, begun in 1977, may also have been a factor. However, citing the study of breastfeeding in metropolitan areas, they argue that "these programs have failed to convey the correct messages or have inadequately reached the working or better educated women who delivered mostly in hospitals or clinics."—*P. Rind*

References

1. M. R. Joesoef, B. Utomo and G. L. Lewis, "Breast Feeding Practices in Metropolitan Indonesia: Policy Considerations," *Journal of Tropical Pediatrics*, **34**:270, 1988.

2. M. R. Joesoef, J. L. Annest and B. Utomo, "A Recent Increase of Breastfeeding Duration in Jakarta, Indonesia," *American Journal of Public Health*, **79**:36, 1989.

Bangladeshi Midwives Need Training to Counter Dangerous Birthing Practices and Misinformation

Traditional midwives in rural Bangladesh lack basic knowledge about labor and childbirth, according to a recent survey. They are unaware of appropriate sterile technique for cutting the umbilical cord and removing the placenta and are uninformed about nutrition intake needs during pregnancy and immediately afterwards. The investigators conclude that since midwives deliver the overwhelming majority of babies in rural Bangladesh, special training to counter potentially harmful practices is necessary if these women are to provide effective maternal and child health services in areas with few other health care alternatives.[1]

In 1986, the Christian Commission for Development in Bangladesh started a midwifery training program as part of its efforts to improve community-based health care and the obstetrics services offered by traditional birth attendants. Interviews were conducted with 242 of the midwives selected for training. The midwives were asked about their personal characteristics and beliefs, their knowledge of pregnancy and childbirth, and their midwifery experience and practices.

A substantial majority of the traditional midwives were over age 30 and either married or widowed. Reflecting the low status of the profession, eight out of 10 were illiterate. Moreover, many of these women had learned midwifery from informal sources, especially from female relatives (cited by nearly three-quarters of those surveyed). The majority (65 percent) mentioned indigestion or vomiting as a sign of pregnancy, whereas only 35 percent cited amenorrhea. An even larger majority (80 percent) could not offer any symptom as a sign of a complication of pregnancy.

All of the midwives indicated that they tied the umbilical cord with thread, but most (61 percent) did nothing to sterilize it. More midwives used a razor blade than a bamboo sheath to cut the umbilical cord, but 43 percent said that they did not sterilize the cutting instrument at all and a similar percentage did so ineffectively by washing it in hot water. After cutting the umbilical cord, the midwives applied such materials to the navel as (in descending order of mention) baked soil gutted from an earthen oven, dettol (an antiseptic liquid widely used in Bangladesh), mustard oil, sulfur dioxide, ashes of burned clothes, red soil, dried cow dung, saliva and smashed betel nuts.

In response to questions on aiding the expulsion of the placenta, 32 percent of the midwives said that they pull it out by inserting their hand into the womb, 33 percent encourage the expulsion by putting hair or garlic into the mother's mouth or by inducing vomiting, 22 percent apply mustard oil near the mother's navel or manipulate her waist, 11 percent give the mother salted hot water or hot milk and 10 percent say that they put some materials on top of the house (e.g., dishes or pots used for cooking or measuring rice). In addition, eight percent of the midwives admitted referring the mother to another source of care (either modern or traditional health care providers).

The midwives were also asked about their perceptions of the causes of neonatal morbidity and mortality. The majority (57 percent) correctly believed tetanus to be a cause of neonatal death. However, even though 12 percent correctly identified the improper cutting of the umbilical cord as a source of tetanus, an equal proportion claimed that the mother's life-style had caused it and twice as many (24 percent) blamed evil spirits. (Since there could be some overlapping among these categories, the percentages do not necessarily add up to 100.) Postpartum dietary restrictions mentioned by the midwives included many protein-rich foods, such as all or certain kinds of fish, meat or eggs, legumes, and milk or sweets. With regard to the baby's nutritional intake, the majority of midwives (61 percent) recommended that the mother withhold breastfeeding for the first 1–3 days after birth.

The researchers affirm that many of the midwives' beliefs and practices "could be potentially dangerous and could imperil the life of both mother and child." Even though a majority of midwives correctly identified tetanus as a source of neonatal mortality, more than one-third attributed the infection to supernatural and nonscientific causes, while one in eight cited un-sterile technique. The authors point out, however, that some of the practices (such as cutting the umbilical cord with a razor blade instead of with the traditional bamboo sheath, and washing the cutting implement in hot water to reduce the risk of infection) appear to have a scientific basis. They conclude that, given the severe shortage of medical and financial resources in rural Bangladesh, the most feasible approach to improving maternal and child health care is through the midwife, who performs the vast majority of deliveries in rural Bangladesh and is culturally accepted and accessible. Thus, the researchers recommend that midwives be trained about "unnecessary complications and harmful practices surrounding childbirth" so that they can be "more effective in providing basic health services to mother and child... in every village community."—*L. Remez*

Reference

1. R. Amin and A. H. Khan, "Characteristics of Traditional Midwives and Their Beliefs and Practices in Rural Bangladesh," *International Journal of Gynecology and Obstetrics*, **28**:119, 1989.

Sri Lanka Family Size Declines; Estates Show Greatest Health Needs

Fertility has fallen substantially in Sri Lanka since the early 1960s, with the total fertility rate (TFR) having decreased from five births per woman in 1963 to fewer than three in the period 1984–1987. Marriage and first birth are occurring 2–3 years later, on average, than they did a few decades before. The small decline in fertility that has occurred since 1983 can be attributed almost entirely to decreased fertility and the prevalence of sterilization among women over 30. Overall, contraceptive awareness and use are high, with sterilization the most commonly used contraceptive method. The Sri Lankan government, which has provided incentives for sterilization by paying for patients' transportation, lost workdays and incidental expenses, is now trying to increase the acceptance and accessibility of temporary modern methods. These are some of the findings from the 1987 Sri Lanka Demographic and Health Survey (SLDHS).[1]

Sri Lanka (formerly Ceylon) is an island off the southern coast of India. About half of its people live in the "wet zone" districts in the southwest, which account for only 20 percent of total land area. Many estate plantations of tea, rubber, coconut and spices are located in this wet zone. Since the 1930s, there has been considerable migration into the northern dry zone, which supports paddy cultivation. Sri Lanka is a multiethnic country: According to a 1981 census, 74 percent of the residents are Sinhalese, 13 percent are Sri Lankan Tamils, six percent are Indian Tamils and seven percent are Sri Lankan Moors; another one percent are Burghers, Malays or of another ethnic group. In general, the Sinhalese are Buddhist, the Tamils are Hindu, the Moors are Muslim and the Burghers are Christian. By the middle of 1987, Sri Lanka had an estimated total population of 16.2 million. The growth rate for Sri Lanka for 1971 through 1981 was 1.7 percent, lower than the projected 2.2 percent because of recent migration due to employment opportunities in Gulf countries and because of the repatriation of Indian Tamils.

Marriage and Fertility

The 1987 SLDHS data are based on interviews with 5,865 ever-married women aged 15–49 from households in seven Sri Lankan regions, or zones. Interviews could not be conducted in the northern and eastern zones because of civil disturbances; these regions contain about 14 percent of the 1986 estimated population of Sri Lanka. Overall, 93 percent of the women interviewed are currently married, three percent are separated or divorced and four percent are widowed. Women's median age at marriage has risen from 20–21 among those aged 40 and older to 23 among those aged 25–39. Only about 30 percent of women aged 20–39 were married by the age of 20, compared with 41 percent of those aged 40–44 and 50 percent of those 45–49.

Age at first birth has also risen, with the greatest change occurring in urban areas. Overall, 23 percent of women aged 45–49 had their first child before the age of 18, compared with just six percent of those aged 30–34 and five percent of those aged 20–24. The median age at first birth among women in Colombo (the capital) and other urban areas is 25.3 and 26.5, respectively, while among rural women it is 23.7 and among women on the estates it is 22.5. The SLDHS data also reveal that 38 percent of women 25–29 and nearly one-fifth of those 30–34 have not given birth.

The TFR in Sri Lanka ranges from a low of 2.1 lifetime births per woman in Colombo and other urban areas to a high of 3.3 on the estate plantations. Across all sectors and zones, the TFR declined from 5.0 births per woman in 1963 to 3.1 in 1981–1983 and 2.7 in 1984–1987. The largest decline occurred in rural, nonestate areas, where the TFR fell from 3.2 in 1981–1983 to 2.8 in 1984–1987. The mean number of children ever born among Sri Lankan women aged 45–49 is 4.9, and if current age-specific fertility rates remain unchanged, the average number of children ever born will be 2.7 by the time new cohorts entering the reproductive period reach the ages of 45–49.

When all ever-married women are considered, the average number of children ever born is 3.0, representing a decrease from 3.9 in the 1975 Sri Lanka World Fertility Survey. Across all ages, only one-third of women in the 1987 SLDHS have four or more children, compared with half of the women in 1975. Age at marriage is inversely related to the average number of children ever born, which ranges from a high of 5.6 for women who married before age 15 to 2.1 for women who married between the ages of 25 and 27.

Contraceptive Knowledge and Use

Knowledge about contraceptives (including prompted knowledge) is high among Sri Lankan women: For all ever-married women aged 15–49, nearly 99 percent know of at least one modern method. Female sterilization is known by nearly all (98 percent) of ever-married women. The pill and male sterilization are also well-known, by 93 and 91 percent of women, respectively. Fewer women (83 percent) have heard of the IUD and 72 percent know about condoms. The diaphragm, foam or jelly and NORPLANT® are known by the smallest proportions of women—14 and six percent, respectively. Most women who know about the pill, the IUD, injectables or sterilization cite government hospitals or clinics as sources. Traditional methods are generally less well-known: Just 61 percent of women are aware of periodic abstinence as a method, and fewer than 40 percent know about withdrawal.

Ever-use of any method of contraception among ever-married women rose from 47 percent to 69 percent between 1975 and 1982. However, between 1982 and 1987, ever-use of any method increased only slightly, from 69 to 72 percent. Among currently married women, the proportion currently using contraception increased from 34 percent in 1975 to 58 percent in 1982 and 62 percent in 1987. (Among these users, approximately two-thirds use modern methods and another one-third rely on traditional methods.)

The greatest change in contraceptive use among currently married women is a nearly threefold increase in the proportion who have been sterilized, from 11 percent in 1975 to 30 percent in 1987. In contrast, the proportion of currently married women using temporary modern methods has remained about the same—9.6 percent in 1975, 9.9 percent in 1982 and 10.8 percent in 1987. For the same three years, the proportions of currently married women using traditional methods (rhythm, withdrawal or other methods) were 14, 26, and 21 percent, respectively.

Among contraceptive users, the proportion relying on temporary modern methods has decreased, from 28 percent in 1975 to 18 percent in 1987. (Although use of the pill and injectables rose slightly, condom use declined, and IUD use dropped dramatically, from 15 to three percent.) Of all women using modern methods, however, the proportion choosing sterilization increased steadily, from 31 percent in 1975 to 38 percent in 1982 and 48 percent in 1987; most of this increase occurred among women over 30. Traditional methods were practiced by 41 percent of married women using a method in 1975 and by 34 percent in 1987; this apparent decline may be related to differences in the way in which prolonged abstinence was classified in the two surveys. Periodic abstinence, or rhythm, was used by one-quarter of all users in 1975, 1982 and 1987.

Between 62 and 68 percent of currently married women living in Colombo, other urban areas or rural areas use some method of contraception, compared with 51 percent of women on the estates. However, a higher proportion of women living on the estates who use a method have been sterilized (30 percent vs. 23–25 percent in the other areas). The prevalence of male sterilization (10 percent) is about twice as high on the estates as in other regions.

Overall, contraceptive use was found to be strongly linked to both education and parity. Among women with no education, five percent use modern temporary methods and 10 percent use traditional methods; these proportions are 14 percent and 31 percent, respectively, among women with more than a secondary education. On the other hand, education is inversely related to the prevalence of sterilization: Almost 40 percent of women with no education or a primary education rely on sterilization, compared with just 16 percent of women with more than a secondary education. Sterilization is strongly linked with parity as well: More than 50 percent of women with four or more children rely on sterilization as a method, compared with just two percent of those with one child and 18 percent of those with two children. Among women with two children, about one-third of those using sterilization rely on male sterilization. However, this proportion drops to one-sixth among women with more than three children who use sterilization as a method.

The mean ideal number of children given by both ever-married and currently married Sri Lankan women is 3.1, representing a decline from the mean of 3.8 reported in 1975. In addition, the desired number is almost exactly the same as the 3.0 mean number of children ever born to ever-married women aged 15–49. Among women with more than three children, the ideal mean given is slightly lower than the number of children they actually have; more than 85 percent of these women are either sterilized or say they want no more children. The mean number of children desired is directly related to age, is inversely related to education and varies according to region: Women younger than 30 report a mean ideal family size of 2.7 or less, while the ideal number given by women aged 45–49 is 3.8. The average ideal number of children given by women with no education is 3.5, while that given by women with more than secondary education is 2.7. By region, women living in Colombo give the lowest mean (2.8), while women on the estates give the highest (3.3).

The SLDHS data reveal that 23 percent of currently married Sri Lankan women are in need of family planning services, ranging from 15 percent of those living in urban areas other than Colombo to 25 percent of those on the estates. (These women are fecund, are not practicing contraception and either want no more births or want to postpone the next birth for two or more years.) Among currently married women who do not practice contraception, 38 percent intend to use a method in the future, 48 percent do not intend to do so and 13 percent are undecided.

Maternal and Child Health

During the 10 years preceding the 1987 survey, infant and child mortality in Sri Lanka decreased substantially. Between the periods 1972–1977 and 1982–1987, infant mortality dropped by 37 percent (from 40 deaths per 1,000 births to 25 deaths per 1,000 births), child mortality declined by 51 percent and mortality among all children under five declined by 41 percent. The percentage decline in infant mortality for males and females was 36 and 40 percent, respectively, while female child mortality dropped by 59 percent and male child mortality dropped by 40 percent. Children on the estates are at highest risk: The infant mortality rate of 58 per 1,000 births, the child mortality rate of almost 17 per 1,000 births and the under-five mortality rate of 73 per 1,000 births are all approximately twice as high as in other areas of Sri Lanka. The infant mortality rate among children born to mothers with no education (52 per 1,000 births) is 2.5 times higher than the rate among children whose mothers have more than a secondary education; the child mortality rate is nearly three times higher for those born to mothers with no education. Other variables associated with higher infant and child mortality include higher birth order (especially above four), shorter previous birth interval, male sex of the infant and extremes in the mother's age.

The SLDHS data suggest that prenatal care, tetanus toxoid injections and assistance at delivery by a trained medical practitioner have all reduced infant and maternal mortality in Sri Lanka. For approximately 97 percent of births between 1982 and 1987, prenatal care was provided by a doctor (33 percent), by both a doctor and a midwife (62 percent) or by a midwife alone (two percent). Sixty-six percent of all women who gave birth during the 12 months that preceded the survey received two doses of tetanus toxoid, and another 17 percent received one dose. Ninety-four percent of all births from 1982 to 1987 were assisted by a doctor, a nurse or a midwife.

Mothers who were surveyed were able to provide immunization records for 77 percent of children under age five. Nearly all of these children had been immunized for tuberculosis and four out of five had received three doses of diphtheria and polio vaccine. Only half had been immunized against measles; however, measles vaccinations were not available countrywide until 1985. The youngest children were most likely to be immunized: Of 82 percent of children aged 12–23 months for whom information was available, nearly all were fully immunized against tuberculosis, more than nine in 10 against diphtheria and polio and seven in 10 against measles. Two-thirds of all children at age 12–23 months for whom information was available were immunized against all of these diseases.

A national program to fight diarrheal diseases was begun in 1983 and was promoted throughout Sri Lanka by 1987. During this time, the Ministry of Public Health and private groups taught mothers how to use a locally produced oral rehydration product. According to SLDHS responses from mothers of children under five, only about six percent of their children had had diarrhea in the past two weeks, including 11 percent of those younger than 12 months. Seventy-three percent of the children were taken to a medical facility for treatment, and nearly half of them were given oral rehydration salt solutions. Children aged 1–5 months and children living on the estates were the least likely to have received medical treatment.—*M. Witwer*

Reference

1. Department of Census and Statistics, Ministry of Plan Implementation, and Institute for Resource Development/Westinghouse, *Sri Lanka Demographic and Health Survey 1987*, Colombo, Sri Lanka, and Columbia, Md., May 1988.

Long-Term Pill Users Shown to Be at Higher Risk of Breast Cancer

A study from Great Britain exploring possible associations between oral contraceptives and breast cancer in young women has shown a trend of increasing risk of breast cancer among women who had used the pill beyond four years.[1] The recently released data join a welter of new studies on the topic of the pill and breast cancer, many of which have produced conflicting findings.[2] The major issue addressed by most of the studies is whether certain subgroups of women, such as those in whom breast cancer occurs at a relative early age, are more vulnerable as a result of oral contraceptive use.

A recent reanalysis of data from a Swedish-Norwegian case-control study that had previously reported total duration of pill use to be a risk factor for premenopausal breast cancer suggests that nulliparous women may be particularly susceptible to breast cancer if they are long-term pill users.[3] U.S. data from the Cancer and Steroid Hormone Study indicate, however, that even long-term use of oral contraceptives does not contribute to breast cancer risk among women who are already susceptible because of a family history of breast cancer.[4]

The British Study

An analysis of pill use and breast cancer risk by the UK National Case-Control Study Group involved women younger than 36 at diagnosis of breast cancer. The women came from 11 health regions in England, Scotland and Wales, and most were diagnosed between January 1, 1982, and December 31, 1985. A list of 1,049 women eligible for the study was compiled from local cancer registries, supplemented by information obtained from hospital registers.

Between January 1984 and February 1988, at-home interviews were conducted with the patients to obtain demographic characteristics, medical histories and details of personal habits such as smoking and drinking. The research hypothesis was not revealed to the women, who were told that they were participating in a general health survey. The interview information was supplemented by information from the records of the women's primary-care physicians. A woman who matched each breast cancer patient's age (within six months) was chosen from among the physician's other patients and was enrolled in the study as a control. Controls were selected only for patients who had been interviewed, and if the first control declined to participate, a second (or subsequent) control was selected using the same procedure.

Of the eligible patients, 755 were interviewed, for a response rate of 72 percent. Three percent of patients refused to be interviewed, three percent had moved out of the study area, 16 percent had died and seven percent were not permitted by their doctor to participate, mainly because they were too ill to be interviewed. The same number of controls were interviewed, 89 percent of whom were the first control selected. In the analysis, relative risks were adjusted for breastfeeding, as well as for such accepted breast cancer risk factors as age at menarche, nulliparity, age at first full-term pregnancy and family history of breast cancer.

Among breast cancer patients, 91 percent had used the pill at some time, compared with 89 percent of controls. A significant trend in risk of breast cancer was found with duration of oral contraceptive use: Women who had used the pill for no more than four years had no increased risk of breast cancer, but by the time women had used the pill for more than eight years, they had a risk of 1.7 relative to never-users; the trend with duration of use was significant at $p<0.001$. The same trend was found regardless of whether women were nulliparous or parous.

Examination of the data among parous women by duration of pill use before and after a first full-term pregnancy showed that using the pill after a first pregnancy increased the relative risk among long-term users over and above the risk associated with pill use before a first pregnancy. While women who had used the pill for more than eight years before a first full-term pregnancy (and who may also have used the pill after that pregnancy) had a risk relative to never-users of 1.4 (trend with duration of use significant at $p<0.05$), those who used the pill for a similar length of time after pregnancy (and who may also have used the pill prior to a first full-term pregnancy) had a relative risk of 2.0 (trend with duration of use significant at $p<0.01$). An association between breast cancer and pill use before a first full-term pregnancy has been reported in other studies, but this study is unique in reporting that pill use after a first full-term pregnancy contributes to breast cancer risk, even among women who had not used oral contraceptives before their first delivery.

The age at which pill use began (18 or younger, 19–21, 22–24 and 25 or older) had no effect upon the duration-of-use patterns established in the previous analyses; that is, in each age-group, there was a trend by duration of use, with the greatest risk existing among those using the pill for more than eight years. Neither did analysis of the data by recency of use (whether the women had taken the pill within three years of diagnosis, within six years, within nine years or within 12 years) have any substantial effect on duration-of-use trends. Examining the effect of a latency period on breast cancer risk by disregarding use within the three years prior to diagnosis, within six years, within nine years and within 12 years was also inconsequential to the patterns already established.

Oral contraceptives with at least 50 mcg of estrogen displayed a duration-of-use trend that was statistically significant ($p<0.001$), with those women who had used the pill for more than eight years having a relative risk compared to never-users of 2.6. The relative risk remained about the same when pill use in the three years prior to diagnosis was disregarded. Few women had used pills with less than 50 mcg of estrogen for more than eight years, and a trend toward increased risk with duration of use was only marginally significant ($p<0.10$). Progestin-only pills are used mainly during breastfeeding, and thus duration of use is short, but the available data indicated a protective effect against breast cancer after 12 months of use. Among women who used the progestin-only pill for more than two years, for example, the risk of breast cancer relative to never-users was 0.6 ($p<0.05$), but the finding is based on very small numbers of cases and controls.

The researchers suggest viewing with

caution those results showing that pills containing less than 50 mcg of estrogen may carry a lower risk of breast cancer and that progestin-only pills may even be protective. Low-dose formulations have been on the market for less time than pills containing 50 mcg or more of estrogen, and few women enrolled in the study had used them for long periods. Likewise, few had used progestin-only pills for prolonged periods.

If the increased risks found in this study are accurate, approximately 20 percent of breast cancer among women younger than 36 could be attributable to oral contraceptive use. The researchers note that while two breast cancer registries in England and Wales do show an increased incidence of breast cancer among women aged 25–34, the increase began in the early 1960s, too early to be explained by pill use. Whether women who are diagnosed with breast cancer at such an early age are different from the majority of women with breast cancer, who are not diagnosed until much later ages, or whether prolonged pill use at an early age might produce a persistent increase in risk that will continue as these women age is a matter of speculation.

The Swedish-Norwegian Study

Women less than 45 years of age who had had invasive breast cancer diagnosed between May 1984 and May 1985 were enrolled in a Swedish-Norwegian case-control study of the pill. Of the 473 breast cancer patients from the two countries who were eligible, 89 percent were interviewed regarding their demographic characteristics and reproductive and contraceptive histories. Controls (two for each Norwegian patient and one for each Swedish patient) were selected from population registries and were matched to patients by date of birth. Eighty-one percent of controls were interviewed, and data were analyzed for 422 patients and 722 controls.

An analysis of relative risk of breast cancer by duration of oral contraceptive use before a first full-term pregnancy was adjusted for a family history of breast cancer and a history of breast biopsy. Parous women who had used the pill showed no significant increase in risk of breast cancer relative to never-users, even if they had used the pill for eight or more years. Results were inconsistent among nulliparous women: Those who had used the pill for less than four years had a significant breast cancer risk of 2.8 relative to never-users, those who had used it for 4–7 years had a nonsignificant relative risk of 1.0 and those who had used it for eight years or more had a significant risk of 4.3.

When they examined the data by total duration of pill use, the investigators found that women who had used the pill for 8–11 years, with at least eight years of use prior to a first full-term pregnancy, had a significantly increased risk of breast cancer relative to never-users of 3.4. Women who had used the pill for 12 years or more, all of it after a birth, had a relative risk of 3.0. Further analysis revealed, however, that only the total duration of use made a significant contribution to risk, which increased by 17 percent for every three years of pill use, regardless of whether pill use occurred before or after a first pregnancy.

Since nulliparous women had a higher relative risk after eight years of pill use than parous women had after 12 years, the researchers conclude that "a full-term pregnancy may modify any increased risk possibly induced" by oral contraceptives; their findings also give some support to suggestions that nulliparous women "may be particularly susceptible to long-term exposure to oral contraceptives."

Family History of Breast Cancer

An analysis of oral contraceptive use among women with a family history of breast cancer used data from the Cancer and Steroid Hormone (CASH) Study, a population-based case-control research project conducted by the U.S. Centers for Disease Control with support from the National Institute of Child Health and Human Development. The CASH study collected data for two years, beginning in December 1980, on cancers of the breast, ovary and endometrium among women aged 20–54 living in eight geographical areas of the United States. It identified 5,889 women who received a diagnosis of breast cancer, 80 percent of whom participated in at-home interviews.

Controls, selected during the same two-year period in which patients received their diagnosis, were obtained by random telephone dialing of households in the same region as the patient. They were matched to patients by five-year age intervals. Of the 5,698 control women selected, 83 percent were interviewed, also at home, and 108 were then excluded because they had a previous history of breast cancer or they had reached 55 years of age before they were interviewed. The analysis of data compares 4,730 breast cancer patients with 4,646 controls.

Twelve percent of the breast cancer patients had a family history of breast cancer through a first-degree blood relative (mother, sister or daughter), and 16 percent had such a history through a second-degree relative (grandmother or aunt). Comparable figures among controls were six percent and 13 percent. Thirty-nine percent of patients and 47 percent of controls reported no family history of breast cancer, and 33 percent of patients and 34 percent of controls reported no known family history of breast cancer, although information for one or more relatives was incomplete. The data were adjusted for age, age at menarche, age at first-term pregnancy, parity, menopausal status and benign breast disease prior to oral contraceptive use.

No pattern of risk of breast cancer by duration of pill use (divided into two-year intervals with the final category being more than 10 years of use) could be discerned among women with either a first-degree or a second-degree family history of breast cancer. The only statistically significant finding was a decreased risk relative to never-users of the pill of 0.4 among women with a first degree family history of breast cancer who had used the pill for 6–8 years. To determine whether a latency period alters the results, the researchers analyzed only the data for women who had taken the pill for at least four years, by whether they had completed four years of use within four years prior to enrollment in the study, within 5–9 years or within 10 or more years. However, in none of the latency categories did patients with either a first-degree or a second-degree family history of breast cancer have a relative risk that was significantly different from women who had never used oral contraceptives.

An analysis by months of use before a first full-term pregnancy showed only one statistically significant increased relative risk: Women who had a second-degree relative with breast cancer and who had taken the pill for 4–6 years prior to a full-term pregnancy showed a relative risk of 3.1. The relative risks for both shorter and longer periods of use were all in the range of 0.9–1.3 and were not significant. When women who had completed four years of pill use prior to a first full-term pregnancy were analyzed by latency intervals, the results were all nonsignificant.—*J. Johnson*

References

1. UK National Case-Control Study Group, "Oral Contraceptive Use and Breast Cancer Risk in Young Women," *Lancet*, 1:974, 1989.

2. J. Johnson, "Weighing the Evidence on the Pill and

Breast Cancer," *Family Planning Perspectives*, **21:**89, 1989.

3. O. Meirik et al., "Breast Cancer and Oral Contraceptives: Patterns of Risk Among Parous and Nulliparous Women—Further Analysis of the Swedish-Norwegian Material, *Contraception*, **39:**471, 1989.

4. P. P. Murray, B. V. Stadel and J. J. Schlesselman, "Oral Contraceptive Use in Women with a Family History of Breast Cancer," *Obstetrics and Gynecology*, **73:**977, 1989.

Human Papillomavirus Is Linked to Cervical Cancer in Latin America

Women infected with the human papillomavirus (HPV) are at increased risk for cervical cancer; the risk is also greater for those who have had more than three sexual partners, were 16 years old or less at first intercourse, have never had a Pap smear or have had eight or more live births. Oral contraceptive use and cigarette smoking, however, do not appear to be significant risk factors. These are the major findings of a recent Latin American case-control study of the association between HPV and cervical cancer.[1]

Women newly diagnosed with cervical cancer were enrolled at hospitals in Panama, Costa Rica, Colombia and Mexico.* To be eligible, women had to be between 18 and 69 years of age and had to have resided in the same area as the study site for at least six months. Two age-matched controls were enrolled for each patient. In Colombia and Mexico, both controls were selected from among patients at hospital inpatient services or outpatient clinics. In Panama and Costa Rica, one control was selected from the general population and the second was selected from the hospital that referred the patient. The controls from the community were chosen randomly from census lists of women living in the same county as the patient. The hospital controls were selected randomly from lists of current patients. Women under evaluation for gynecologic or endocrine diseases or diseases related to smoking, those who had had a previous diagnosis of cancer and those who had had a hysterectomy were ineligible as controls and were replaced.

A total of 766 patients with cervical cancer and 1,532 controls were eligible; 759 patients (99 percent) and 1,467 controls (96 percent) agreed to participate. Of this group, only those with sexual experience (759 patients and 1,430 controls) were included in the final sample. Study participants were interviewed and were then given a pelvic examination, during which cervical-swab specimens were taken for analysis of the DNA of HPV.

Viral DNA was detected in 62 percent of the patients and 32 percent of the controls. Infection with HPV 16 or HPV 18 was found to be highly associated with cervical cancer. Once the data were adjusted for the woman's age, number of partners, age at first intercourse, number of live births, interval since last Pap smear and number of years of education, the relative risk increased from 2.1 for women whose test reactions were the weakest (indicating the presence of less HPV DNA) to 9.1 for women with the strongest test reactions. Infection with two other types of papillomavirus, HPV 6 or HPV 11, was less strongly associated with the risk of cervical cancer, with 17 percent of patients and seven percent of controls testing positive. The highest risks were observed among those who were positive for both HPV 16 or 18 and HPV 6 or 11.

Women with four or more lifetime sexual partners had a 1.6 times greater cancer risk than women with one partner; those who first had intercourse before age 17, those who had never had a Pap smear and those who had had eight or more children all had elevated risks of cervical cancer (relative risks of 2.1, 3.0 and 1.4, respectively). After adjusting for these potentially confounding factors, the researchers found that smoking, oral contraceptive use and limited education were not significant risk factors for cervical cancer. Furthermore, no relationship was found between any of the risk factors and the presence of HPV DNA. Although it has been assumed that most genital HPVs are sexually transmitted, the lack of association between sexual behavior and HPV infection suggests that this may not always be the case.

The researchers note that the 32 percent rate of HPV 16 or 18 found among the study controls was higher than rates reported in other large population-based surveys that have used the same testing technique: 2–13 percent among women in Germany, and 6–13 percent among women in Denmark and Greenland. The inclusion in the control sample of women with cervical abnormalities could account for some of this discrepancy. The higher rates observed could also reflect a greater prevalence of HPV infection among Latin American women, who are at exceptionally high risk of cervical cancer. The investigators conclude that their findings provide "circumstantial evidence for the hypothesis that HPV is an etiologic agent of cervical cancer."—*F. Althaus*

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*The hospital in Panama represented the entire country; the three hospitals in Costa Rica represented the entire country; the hospital in Bogotá, Colombia, represented only medically indigent patients in that city; and the Mexico City hospital represented patients with social security coverage in that city.

Reference

1. W. C. Reeves et al., "Human Papillomavirus Infection and Cervical Cancer in Latin America," *New England Journal of Medicine*, **320:**1437, 1989.

One-Third of Infants Born To HIV-Positive Mothers Face Illness or Death

About one-third of infants born to women testing positive for the human immunodeficiency virus type 1 (HIV-1) will themselves either die or show evidence of infection with the AIDS virus one year after birth, according to the results of two very different studies—one conducted in Zaire, in which the women had become infected heterosexually,[1] and the other in France, in which two-thirds of the mothers were intravenous drug users.[2] Both studies indicate that AIDS progresses far more rapidly in infants than it generally does in adults. However, infants born to seropositive women in Zaire were far more likely to die during their first year than those in the French study. The researchers conclude that HIV-1 infection may have increased the infant mortality rate in Kinshasa, Zaire, by as much as 15 percent.

Since maternal antibodies to the AIDS virus may persist in an infant for up to a year after birth, researchers in both studies followed infants for at least 12 months. Investigators in Zaire conducted HIV-1 screening among 8,108 women who had given birth at one of two Kinshasa hospitals that serve populations of very different socioeconomic status. The proportion of seropositive women (about six percent) was similar at both hospitals; 85 of the seropositive women already had AIDS, but none reported a history of drug abuse.

For one year, the researchers followed 475 infants born to 466 seropositive women (329 who delivered at a hospital serving predominantly low-income women and 137 who delivered at a hospital serving a higher income population). The investigators also followed a group of 616 controls—infants born to 606 seronegative women who were matched with the experimental group for age, parity and hospital. After one year, 21 percent of the infants of seropositive mothers had died and eight percent of the surviving infants had AIDS, whereas only four percent of the control infants had died. Furthermore, 39 percent of a subsample of 92 infants born to seropositive mothers had evidence of HIV-1 infection 12 months after birth.

Infants born to the 85 women with AIDS were at a clear disadvantage at birth: Thirty-three percent of these newborns weighed less than 2,500 g, compared with only 17 percent of those born to mothers with asymptomatic infection and 10 percent of those born to seronegative control mothers (significant at $p<0.001$). Infants of women with AIDS were also more likely to have a low gestational age at birth, a low ratio of head circumference to height and chorioamnionitis than were infants of the other two groups of mothers. Babies born to seropositive women were also more likely than controls to be premature, to be of low birth weight and to die during their first 28 days. Those born to women with severe symptoms of HIV infection were at even higher risk.

The increased rate of prematurity contributed greatly to the higher overall death rate among infants born to seropositive mothers. During their first year of life, 100 infants born to seropositive mothers died—29 as neonates (62 percent of these were premature). The other 71 infants died later, either from AIDS (34 percent), diarrhea (21 percent), pneumonia (12 percent), meningitis (eight percent) or other causes (25 percent). In contrast, of 23 deaths among infants born to seronegative mothers, only one in eight neonatal deaths was attributed to prematurity. There were 15 postneonatal deaths: Six percent were attributed to prematurity, 27 percent were caused by diarrhea, 20 percent by meningitis, seven percent by pneumonia and 40 percent by other conditions. Of the original 475 infants born to seropositive women, seven were stillborn and another 27 were lost to follow-up. Twenty-seven of the remaining 341 who survived their first year (eight percent) had AIDS.

In an effort to discern the means of perinatal HIV transmission, 92 randomly selected umbilical cord blood samples from infants of seropositive women were tested for seropositivity, and T4-cell counts were performed in 37 of these women. The researchers found that eight of the 19 infants with positive umbilical cord blood cultures died during the first year of life, compared with just 14 of 73 infants with negative umbilical cord blood cultures. In addition, seropositive women with low absolute T4-cell counts were more likely to have an infant with a positive cord blood culture: Six of 18 women with antenatal T4 counts of fewer than 400 cells per cubic millimeter had an infant with a positive culture, while none of the 19 women with antenatal T4 counts above that level did. Further, infants born to mothers whose placenta showed severe chorioamnionitis were approximately twice as likely to have contracted perinatal HIV-1 as were those born to mothers without this symptom.

Mortality rates among children born to seropositive and seronegative mothers at the two hospitals differed considerably, partly because of differences in socioeconomic status and partly because of the higher prevalence of women with AIDS or AIDS-related symptoms at the hospital serving the lower income population. The researchers conclude that if six percent of all women in Kinshasa are, in fact, seropositive for HIV-1, the infant mortality rate in the city may have already increased 15 percent as a result of HIV infection.

In the French study, 117 infants aged 18–24 months were evaluated; these infants were part of a larger group born to 308 seropositive mothers. Twenty-seven percent (32) of the 117 were seropositive for HIV; six of those infants had already died of AIDS. Of the 32 seropositive infants, only two remained without symptoms, while 19 developed severe forms of HIV infection and 11 had nonspecific symptoms. Among the remainder of the 117, 65 percent were seronegative and free of symptoms, while eight percent were seronegative but had symptoms possibly related to HIV infection.

The route of delivery (vaginal or cesarean section) did not appear to have influenced the risk of infection in infants, but the researchers noted that they did not have detailed information about the rupture or status of the membranes at birth or the degree of infants' exposure to maternal blood. Increased risk was associated with breastfeeding, however: Five of the six infants who were breastfed developed antibodies to HIV, compared with 25 of 99 who were bottle-fed (significant at $p<0.01$). (All seropositive mothers had been advised against breastfeeding.) Since so few infants were breastfed, the investigators suggest that larger studies will be needed before an association can be assumed.

Of the 308 mothers who formed the larger study group, 62 percent probably had acquired the infection through intravenous drug use, while 31 percent were thought to have been infected by male sex partners. (Many of the latter group came from Haiti or Central Africa.) Three percent of the women had had blood transfusions before 1985, and eight percent of the women had more than one risk factor.

The infection rate and the ultimate outcome for the 117 infants did not appear to have been influenced by how the mothers had acquired the infection. Furthermore, neither drug-withdrawal symptoms in infants nor active drug use by the mothers during pregnancy altered the risk of perinatal infection. In the French study, there were too few women with symptoms of HIV infection to allow for comparisons based on the clinical status of the mothers.

Although the HIV-infected infants in France did not differ at birth from the noninfected infants (born to seropositive mothers) with regard to weight, height, head circumference or rate of malformations, such characteristics were different among infants of drug-using mothers. Among infants of the same mean gestational age, those whose mothers used drugs were shorter, were of lower birth weight and had smaller head circumferences. Furthermore, nine of the 10 infants with structural abnormalities (including four cases of cleft palate) were born to women who used drugs. In contrast, infants of mothers infected heterosexually were of average height and weight and had a rate of malformations comparable to those of infants in the general population.

The researchers conclude that about one-third of infants born to seropositive mothers can be expected to show evidence of HIV, and that 20 percent of these babies will die by the age of 18 months. The progression of the disease is far more rapid in infants than in adults: The rate of diagnosis of AIDS among HIV-positive, symptom-free adults is about 2–5 percent per year, whereas 59 percent of the HIV-positive infants had severe disease by the age of 18 months. The researchers note that new methods used to detect the HIV genome will improve diagnosis of HIV infection and permit earlier treatment. Although the mortality rate at one year was much lower in this study than in the Zairian study, the combined rate of morbidity and mortality for infants born to seropositive women of about 27 percent was remarkably similar to the rate of 29 percent found in Kinshasa.—*M. Witwer*

References

1. R. W. Ryder et al., "Perinatal Transmission of the Human Immunodeficiency Virus Type 1 to Infants of Seropositive Women in Zaire," *New England Journal of Medicine*, **320**:1637, 1989.

2. S. Blanche et al., "A Prospective Study of Infants Born to Women Seropositive for Human Immunodeficiency Virus Type 1," *New England Journal of Medicine*, **320**:1643, 1989.

Books in Review

A Guide Through the Population Jungle

Perspectives on Development and Population Growth in the Third World
by Ozzie G. Simmons, Plenum Press, New York, 1988, $32.50, 277 pp.

Reviewed by Walter Mertens

In a recent overview of the economic consequences of population change in the developing world, a member of the "revisionist school" of population studies, Allen Kelley, argued that rapid population growth in developing countries is a toothless (and indeed ornamental) tiger. On the other hand, on asking whether "current qualified and moderate evaluations of the economic impacts of population can be sustained over time,"[1] his prudent conclusion is that "if the history of the population debate can be taken as a guide," these more modest evaluations also will not last. The appearance of Ozzie Simmons's book *Perspectives on Development and Population Growth in the Third World* challenges the revisionist view by successfully demonstrating that when attention is given to the substance of the population debate, the revisionists will be prevented from claiming even a temporary victory.

Perspectives on Development and Population Growth is an impressive work of scholarship and synthesis. Compared with many products in this field, loaded as they often are with jargon, its style is crystal clear. Because of its double qualities of substantive strength and elegant presentation, the book will be extremely useful to five types of persons. The intelligent layman with an interest in the current status of the population field will find it easily accessible. Population scientists will encounter a gold mine of information organized around a framework that artfully combines analysis and synthesis. Scientists from other disciplines will gain a host of insights useful in their own endeavors. Those working in population programs will find plentiful information showing that their work is significant. And, finally, those with a direct interest in population policies will find this book an indispensable tool.

Far more than being simply a discussion of the economic consequences of population growth, Simmons's book offers a set of perspectives on development and population growth in the developing world that combines the insights of many social sciences. It is a fine monument to the resourceful career of the late Ozzie Simmons, and behind it we can recognize the vibrant personality of a man who skillfully combined the talent of the scholar and the practical insights of the field person. Simmons is fondly remembered by many in the developing world who have profited from his innovative programs to use social research for population policy analysis. *Perspectives on Development and Population Growth in the Third World* ensures that his insights will survive his untimely death.

The book consists essentially of two parts. The first three chapters present an admirable overview of important development theories and policies propounded over the last 40 years; their strongest feature is a view of development as a broad social process that cannot be limited to changes in a series of income and output indicators. Chapter 1 gives fundamental definitions and sketches the historical context of development theories, and the second chapter offers an overview of four development approaches. Simmons severely criticizes the modernization model for its simplistic linear view of development as a transition between two diametrically opposed situations—from traditionalism to modernity. The underdevelopment and dependency model is also found wanting, since it shows the circularity and duality characteristic of the modernization models. Although the author views redistribution with growth and the basic needs approach, the two other development strategies, in a more positive way, he does not hesitate to point out some of their weaknesses and incomplete aspects. Finally, Chapter 3 is dedicated to the problems and prospects of equity-oriented development, with its emphasis on equality of income distribution and satisfaction of basic human needs. The equity-oriented approach is deemed to be the most striking feature of current development thinking, at least as it guides international development assistance.

The second part of the book deals with the interrelations between population and development. Chapters 4 and 5 are general in nature, but they do not suffer from the vagueness that is often a serious deficiency in many treatments of population and development. In the first of these chapters the author looks critically at demographic transition theory as a means of integrating population and development, and finds it wanting in exactly the same ways as the modernization model. Simmons follows this with an examination of the possible influence on population growth of equity considerations. The fifth chapter, modestly subtitled "a selective overview," contains precious building blocks for establishing a fruitful integration of population and development, and is especially constructive in underlining the role of cultural and institutional factors in the interplay of population and development.

Chapters 6 and 7 are devoted to sectoral reviews dealing with natural resources, health, nutrition and food, the status and employment of women and education, all in their interrelations with population. These two chapters are the jewels in the crown: Few, if any, current overviews give

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such a clear and concise exposition of our state of knowledge on these topics.

The final chapter concludes with sound advice for future research and action, and also offers a critical treatment of the revisionist position. In contrast to the harmless population tiger depicted by the revisionists, the tiger Ozzie Simmons describes is far from an ornamental one, and its teeth are very real. In fact, there are many tigers afoot in Simmons's development jungle, in that the author recognizes both that development problems are always multifaceted and that their causality can never be reduced to simplistic ideas of the unilateral influence of population or any other factors. Certainly, the ferocity of Simmons's tiger varies according to the terrain and the time of day, but it is very much a tiger with a bite: For Simmons, population problems are serious problems that matter and that, in most developing countries, are not reducible to intellectual gameplaying, as the revisionists would have it.

Ozzie Simmons would not have been very pleased with a book review that omits mention of disagreements and deficiencies, so I will mention a few of these, too. In the review of development theories presented in the first three chapters, distinctions between the analytic and the normative points of view are not always clear. Is the neglect of basic needs, of distribution and of equity a fundamental cause of underdevelopment, or should these problems be considered more as products of underdevelopment—i.e., as policy objectives for development rather than instruments of development policy? Also missing from the overview is any reference to the current disillusionment with economic planning and what this implies for development strategies.

A more serious reservation about these chapters is that although they present an excellent overview, they do not point sufficiently to where development theories and strategies have been deficient in integrating population factors. If more attention had been given to this issue, it would have been easier to build bridges between the first and second parts of the book.

The author's familiarity with the important Latin American writers on development is evident in the first part of the book, but the second part should have featured more references to the strengths and weaknesses of those Latin Americans who have tried to integrate the study of population with new perspectives, such as the importance of survival strategies and their impact on demographic variables. In fact, the book implicitly demonstrates the need for overviews of literature that has been published in other languages widely used for scientific communication* or in languages of countries where population issues have received extensive attention, such as Chinese, Bahasa Indonesia and Portuguese. Simmons's attempt should serve as a model for others to undertake similar syntheses in these languages and to make sure that they are available in English.

I also take issue with some of the author's conclusions with regard to modernization models and to demographic transition theory. Although many of his critical comments are fully justified, I do not think that, by definition, modernization models need be simple linear transitions from one state to another. The same is true for models used to portray the demographic transition. Much richer formulations of these models—versions that are multidimensional and that allow for divergence and change—can be imagined.

Simmons's book has the important virtue of emphasizing that qualitative analysis should be the ever-present twin brother of quantitative analysis and that a full understanding of population issues requires integrated attention to both the macro and micro levels. However, Simmons still expects that somehow it will be possible to find the holy grail—the perfect theory that can answer all of the many current questions. I have my doubts in that regard, although a more unifying view may be possible if history is seen not as the dogmatic precursor of future events but as the source of imaginative new possibilities for the individual and for human society.

However, these criticisms should not in any way be thought to reduce the tremendous value of this book. A few weeks after having heard about the author's death, I happened to be in Mexico City, in one of the city's busiest subway stations. Because of the masses of people, I had to let several trains pass before I could board one myself. As I waited, I could not resist thinking that each time a train's doors slammed shut and the train pulled out, some of the population revisionists' favorite theories were being carried away with it. The revisionists would tell us, for example, that this overcrowding may stimulate subway innovations, that the current annoyance of waiting for a train would eventually be replaced by a utopian system of untroubled movement, that there is a ready supply of models optimistically predicting a future cornucopia of means of transportation, and that many other factors besides overpopulation are responsible for Mexico City's transportation problems.

I do not deny any of these insights, but looking at Mexico City as a whole—and beyond the city, at the country itself—I could not doubt that the quality of human life in Mexico would be much higher if there were a smaller metropolitan area, smaller additions to the nation's total population and a lower rate of natural increase in Mexico's rural areas. I also could not resist thinking that Simmons's book could be a valuable guide in our quest to build a high-quality human environment.

Reference

1. A. C. Kelley, "Economic Consequences of Population Change in the Third World," *Journal of Economic Literature*, **26**:1716, 1988.

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*There are several good examples of such overviews. For example, for Spanish, there is R. Urzua, *Social Science Research on Population and Development in Latin America*, Appendix 11 of *Population Policy: Research Priorities in the Developing World, Report of the International Review Group of Social Science Research on Population and Development*, El Colegio de México, Mexico City, 1978.

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INTERNATIONAL FAMILY PLANNING PERSPECTIVES

Volume 15, Number 4, December 1989

Reproductive Risks and Intentions
Adolescent Fertility in Latin
America and the Caribbean

NEEDED: A NEW 1990s COMMITMENT TO FAMILY PLANNING

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Table of Contents **Page**

Update 125

Articles

Toward Family Planning in the 1990s: A Review and Assessment	Alan Keller Pierre Severyns, Atiqur Khan and Nicholas Dodd	127
Reproductive Risks and Intentions In Six Countries in Sub-Saharan Africa	Scott R. Radloff, Barbara H. Seligman, Judith R. Seltzer and Richard M. Cornelius	136

Special Report

Adolescent Fertility in Latin America And the Caribbean: Examining The Problem and the Solutions	Lisa Remez	144

Digest

Traditional Attitudes, Fear Are Barriers to Female Sterilization in Zaire	149
Overall Fertility Impact of New Contraceptive Methods May Be Limited	150
High-Parity Women Are Found to Have Elevated Risk of Cervical Cancer	151
Gynecologic Disorders Common, Treatment Lacking in Rural India, Bangladesh	152
Indonesian Fertility Rate Falls As Age at Marriage, Modern Method Use Rise	153
Modern Contraception Is Little Known, Rarely Used in Ondo State, Nigeria	155
In Trinidad and Tobago, Fertility Rates Are Low and Method Use Is High	157
Note to Authors	124
Acknowledgment to Reviewers	162
Index to Volume 15	160

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UPDATE

AIDS Hits Côte d'Ivoire

Of approximately 1,500 consecutive patients admitted during 1988 to the two main hospitals in Abidjan, the capital of Côte d'Ivoire, 547 were infected with the human immunodeficiency virus (HIV) and 263 had AIDS.[1] In all, 43 percent and 28 percent of those admitted to each of the hospitals were infected with HIV, and at each hospital, infection rates were higher among male patients (49 percent and 33 percent) than among female patients (30 percent and 19 percent). The highest rates of HIV infection and of AIDS were found among 30–39-year-olds and among men and women born outside of Côte d'Ivoire. The researchers estimate that at these rates, the two Abidjan hospitals could expect to admit 1,252 new AIDS cases each year, 1,015 of these among residents of Abidjan. They also observe that at the time of the study, 19 percent of all admissions and 33 percent of all deaths in one of the hospitals could be attributed to AIDS. The disease "has rapidly emerged as a major public health problem" in Abidjan, the investigators conclude.

[1] K. DeCock et al., "Rapid Emergence of AIDS in Abidjan, Ivory Coast," *Lancet*, **II**:408, 1989.

Sons Preferred in Pakistan

A recent analysis of data from a national survey conducted in Pakistan at the beginning of the decade reveals that son preference had a strong influence on fertility in Pakistan in the 1970s.[1] Sixty-six percent of all women with three or more children wanted no more children, but this proportion varied substantially by the number of sons the women had: Only 11 percent of those with no sons and 45 percent of those with one son wanted to cease childbearing, compared with 64 percent of those with two sons and 80 percent of those with three or more sons. Although in every subgroup, the proportions who wanted no more children were lower among rural women than among urban women, the pattern was clearly discernible in both groups. A multivariate analysis that controlled for a number of potentially confounding factors confirmed these differences: The investigators concluded that "the variable of son preference . . . remained the principal determinant for additional children even after the effect of predictors and covariates [was controlled for]."

[1] S. M. Ali, "Does Son Preference Matter?" *Journal of Biosocial Science*, **21**:399, 1989.

Singapore Muslims Reach Low Fertility

The predominantly Muslim Malay population of Singapore "stands out as the first Muslim population in the world to have achieved replacement level fertility," according to an analysis of 40 years of fertility data from Singapore.[1] In 1947, the first year for which data are available, the total fertility rate (TFR) among Singaporeans of Malay descent was 5.7 lifetime births per woman. By 1963, this rate had risen to 6.7 births per woman, but it then began to fall rapidly, and by 1976 had dropped to 1.9 births per woman. Since then, the TFR among these women has either remained below replacement level or climbed only slightly above it. The fertility decline started later among the Malay women (1964) than among ethnic Chinese in Singapore (1957), but the Malay and Chinese reached replacement-level fertility at around the same time (1976 and 1975, respectively); thus, Malay residents of Singapore required only 12 years to decrease their fertility to replacement level, compared with 18 years among the Chinese residents.

[1] S. Swee-Hock, "Muslim Fertility Transition: The Case of the Singapore Malays," *Asia-Pacific Population Journal*, Vol. 4, No. 3, 1989.

Genital Ulcers and HIV Infection Risk

Fifty-nine percent of a group of 210 men and women who visited a clinic in Kigali, Rwanda, for examination or treatment of genital ulcers were found to have antibodies to the human immunodeficiency virus (HIV).[1] Of the 110 men examined, 24 percent had chancroid, 21 percent syphilis and 17 percent herpes, and 43 percent of the men were infected with HIV. Among the 100 women, 40 percent had syphilis, 20 percent herpes and 19 percent ulcerative chlamydial infection; 77 percent were infected with HIV. The investigators observe that their results confirm hypotheses that genital ulcers play an important role in the heterosexual spread of HIV.

[1] J. Bogaerts et al., "The Etiology of Genital Ulceration in Rwanda," *Sexually Transmitted Diseases*, **16**:123, 1989.

In Search of New Terminology

Family planning program staff in Nepal have not reinvented family planning, but they recently had to invent a new term for family planning.[1] As a result of the Nepal program's longtime strong emphasis on contraceptive sterilization, the old terminology for family planning *(pariwar niyogen)* had become synonymous with surgical sterilization, not only among average citizens but also among government health workers. Because of the program's increasing commitment to promoting spacing and the use of reversible methods, program managers elected to develop a new phrase to represent this concept. Forty focus groups were organized around the country, and many participants agreed that childspacing was important. They also observed, though, that there was no phrase in their language for birthspacing. Besides asking the focus-group participants for suggestions, the project members also held a contest, and the two sources generated more than 200 ideas. After field-testing a final group of 17 phrases, the project leaders chose the phrase *janma antar* ("birth gap"), which is to become the central concept for all future promotions of family planning in Nepal, including radio and television spots.

1. S. Wittet, C. Shrestha and B. Manandhar, "How Do You Say 'Birth Spacing'?" *People*, Vol. 16, No. 4, 1989, p. 35.

Human Papillomavirus and Cancer

A 12-year study indicates that Indian women exposed to the human papillomavirus are at a highly elevated risk of developing cervical cancer.[1] Sixty-eight percent of women who developed carcinoma in situ were infected with the virus, compared with just 27 percent of women who had had an abnormal Pap smear but whose abnormality had resolved rather than progressed. A multivariate analysis revealed that the only other important factor in the risk of developing cervical cancer was early age at marriage, and that women married before age 18 who were infected with the virus were 22 times as likely as other women to develop cervical cancer.

1. B. C. Das et al., "Human Papillomavirus and Cervical Cancer in Indian Women," letter to the editor, *Lancet*, II:1271, 1989.

Writing for Those Who Cannot Read

For 10 years, the Program for Appropriate Technology in Health (PATH) has been developing brochures and booklets targeted to men and women in the developing world who cannot read or whose reading skills are limited. Now, PATH has put together a guidebook to help providers and other organizations develop their own print materials.[1] Step by step, the publication describes the most appropriate ways to develop ideas and test them. In their conclusion, the authors of the guide emphasize that the true experts in this area are the members of the target audience, and that they should be consulted regularly throughout the development process. The guidebook is free for anyone in the developing world, and can be obtained by writing to: PATH, Communication Dept., Suite 700, 1990 M St., NW, Washington, D.C., 20036.

1. M. Zimmerman et al., *Developing Health and Family Planning Print Materials for Low-Literate Audiences: A Guide*, Program for Appropriate Technology in Health, Seattle, 1989.

Fertility Decline in Nepal?

According to the results of a survey conducted in Nepal in 1986, fertility there may have begun to decline in recent years.[1] The total fertility rate (TFR) for the five years immediately preceding the survey is estimated to have been 5.6 lifetime births per woman, down from 5.8 per woman in 1975–1980; when data are restricted to 15–39-year-olds, the TFR appears to have declined from 5.6 births per women to 5.1 over the same period. The quality of the data collected was poor, especially among older respondents, so the contention that Nepal has entered a period of fertility decline awaits confirmation. However, other evidence gathered in the survey indicates that contraceptive prevalence rose from three percent in 1976 to 15 percent in 1986, and that the proportion of 15–19-year-olds who were married (often an indicator of high fertility) fell from 73 percent to 38 percent over the same period.

1. J. M. Tuladhar, "The Onset of a Fertility Decline in Nepal?" *Asia-Pacific Population Journal*, Vol. 4, No. 3, 1989, p. 15.

Marketing Vasectomy in Mexico

A social marketing program begun in the Mexican city of León in 1986 appears to have increased reliance on vasectomy there, despite the area's deep-seated conservatism.[1] In the year before the program was initiated, only 12 vasectomies were done in the entire city (which has a population of about one million). After setting up a clinic where vasectomies would be performed, the project placed advertisements in a variety of media, with the main emphasis on the message that vasectomy "is a useful family planning tool once you have the number of children you wish." In 1988, 322 vasectomies were performed in León, 254 at the new facility. Although the number of operations was still relatively small, the program organizers believe the experience shows that social marketing techniques can be used to promote vasectomy successfully, even in a conservative area.

1. "Marketing Lessons Key Success for Mexican Vasectomy Clinics," *Social Marketing Forum*, No. 17, Fall 1989, p. 9.

Progestin-Only Pill and Breastfeeding

Women who rely on a type of oral contraceptive containing only a progestin while they are lactating appear to breastfeed just as effectively as women using a nonhormonal method.[1] In a study comparing 250 Argentine women using such a pill with 250 women using a nonhormonal method, there were no differences in the level of milk production reported by the women or in the overall growth patterns of the babies, even though the women using the progestin-only pill tended to supplement their baby's diet later than did the other women. The researchers conclude that "it is reasonable to promote progestin-only pills as the formulation of choice for breastfeeding women who wish to use hormonal contraception."

1. M. F. McCann et al., "The Effects of a Progestin-Only Oral Contraceptive (Levonorgestrel 0.03 mg) on Breastfeeding," *Contraception*, 40:635, 1989.

New Male Method Enters Testing Phase

A multinational trial, sponsored by the World Health Organization, of a new male hormonal contraceptive has begun, with about 250 men set to test a birth control drug that is a modified form of testosterone, the male hormone.[1] Preliminary studies showed that 50–60 percent of men who received injections of the drug soon had no sperm in their ejaculate. The current trials will investigate how well the hormone prevents pregnancy, and whether any serious side effects are associated with its use. Researchers hope that testosterone enanthate, as the new drug is known, will be active for up to three months after one injection.

1. "New Male Contraceptive Entering Clinical Trials Worldwide," *Contraceptive Technology Update*, 10:142, 1989.

Nigeria's Next Census

Nearly 30 years after its first (and only) official national census, the Nigerian government is planning to undertake a new one in November 1991.[1] (A preliminary count done in 1973 was rejected by the government then in power.) The information to be derived from the census is vital not just for planning purposes (the current population estimate of 115 million is based mainly on projections from 1963), but also for the apportionment of representatives to the new national legislature scheduled to be reinstituted shortly after the census. Because of the potentially divisive effect of religion and ethnicity in a country like Nigeria, however, the census will ask no questions on such topics. The effort is expected to involve some 300,000 enumerators in at least 200,000 enumeration areas, and results should be available in 1992.

1. A. Haupt, "New Nigerian Census Planned for 1991," *Population Today*, Oct. 1989, p. 8.

Toward Family Planning in the 1990s: A Review and Assessment

In the 1990s, further gains in reproductive health and reductions in population growth will depend on improving family planning and maternal and child health services in the absence of major strategic or technological breakthroughs.

By Alan Keller, Pierre Severyns, Atiqur Khan and Nicholas Dodd

Summary

Expansion of family planning services in the 1990s will require not just additional funding, but different approaches and improved program planning and operation. The United Nations Population Fund (UNFPA) review and assessment concludes that a number of broad strategies are necessary for program success; these include heightening political commitment, generating greater demand for family planning services, increasing the accessibility of services (including involving the private sector more extensively), improving acceptability of services, increasing community participation, and developing adequate personnel and financial bases. Additionally, a number of administrative issues will grow in importance, such as eliminating logistics deficiencies, improving supervision, increasing the efficiency of management information systems, placing greater emphasis on the results of research and evaluation, and improving training.

Introduction

Among all developing countries, contraceptive prevalence rose from around nine percent in the early 1960s to approximately 48 percent in 1987; when China is excluded, the latter figure is 35 percent. Given inevitable population growth, simply maintaining current prevalence rates will require that over 90 million additional couples be served by the year 2000; increasing prevalence enough to lower fertility to the medium-variant United Nations population projections for that year would require that family planning services reach an additional 168 million couples.[1]

On the basis of calculations of current expenditures, such growth in prevalence rates would require that family planning outlays in developing countries (in constant dollars) rise from approximately $3 billion today to between $5 billion and $10 billion by 2000. Whether resources of such magnitude can be made available is uncertain. Thus, beginning in the last months of 1987 and continuing through the first quarter of 1989, the United Nations Population Fund (UNFPA), in consultation with experts throughout the world, conducted a review and assessment intended to define the constraints and challenges of and the opportunities for expanding coverage of family planning services in the 1990s and beyond. This article summarizes the main conclusions of that assessment.

Strategic Issues

If family planning services are to be expanded and improved in the years ahead, administrators will face a number of strategic problems, and whatever success they have in solving them will be an important determinant of the ultimate size of the world's population and of the quality of life in developing countries. Close observation suggests that successful family planning programs (such as those in China, Colombia, Indonesia, Mexico, the Republic of Korea and Thailand) have most—although not necessarily all—of the following characteristics: effective political support; widespread, easily accessible services; multiple public and private delivery systems; a broad choice of contraceptive methods; personnel systems that ensure reasonably adequate and motivated labor forces; sound strategies for financing program activities; relatively strong information, education and communication efforts; adequate logistics systems; strategic planning and flexibility; effective supervisory systems; and well-functioning management information systems and research and evaluation mechanisms.

An examination of the impact of some of these factors has shown that a number of them (grouped under such headings as "policy-making and stage-setting," "service provision" and "record-keeping and evaluation") appear to be directly related to contraceptive prevalence.[2] Yet a large gap exists between recognition of the apparent importance of these components and their degree of development in specific national contexts; in most developing countries, there is considerable room for improvement. In countries that have had relative success, as well as in those that have not, several challenges to program managers seem predictable, and if they are not dealt with effectively, each may slow the progress of family planning. In extreme cases, an inability to develop appropriate responses may lead to stagnation or even to declines in prevalence rates. Below, we summarize some of the most important strategic issues, along with what has been learned about responses to them.

- *Political commitment* is a prerequisite for program success, in that it "produces" the necessary human and economic resources and legitimizes required actions. Hence, in countries where real political commitment to family planning has never existed or in those where it is waning, the task of family planning proponents is to generate commitment at all governmental levels. A number of steps have been found to be effective in this task, such as conducting and disseminating the results of studies analyzing the consequences for maternal and child health and for socioeconomic development of unregulated fertility or high rates of population growth. Cost-benefit analyses and modeling of future socioeconomic trends have also proved effective in convincing political leaders.

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Finally, efforts to persuade grass-roots organizations, such as women's groups and labor unions, of the importance of family planning for health and social development have in some cases resulted in these organizations' involvement in pressing for more and better services.

- *Generation of demand* is necessary in many developing countries, including the majority of those in the Middle East and Sub-Saharan Africa. Spontaneous demand for family planning services is relatively low in these regions, in part because of a lack of knowledge of both the benefits of family planning and the sources of contraceptive services, and in part because of inaccurate perceptions of the efficacy and safety of various contraceptive methods. Even in countries where demand is substantial, a lack of knowledge regarding correct method use and side effects contributes to method failures and discontinuation. Since information, education and communication programs can be used to produce and disseminate motivational materials designed to correct misperceptions and increase demand for family planning, the design and implementation of such programs, both for the community at large and for specific target groups, are critical. Such programs are also essential if potential users are to make an informed choice about services and specific contraceptive methods.
- *Accessibility to services*, worldwide experience has shown, is necessary if programs are to achieve relatively high contraceptive prevalence and hence contribute significantly to national demographic or health objectives. For example, in countries with relatively successful family planning programs, such as Indonesia and Thailand, there are more than two contraceptive distribution sites per 1,000 married women; in Pakistan, on the other hand, where the family planning program has been less successful, there is one source per 11,000 women, and in Bangladesh there is only about one per 15,000 women. (In Sub-Saharan African countries just beginning to offer family planning services, the ratio is even lower.)

To expand accessibility, program managers must often overcome a variety of pressures. In many developing countries, governmental social services focus disproportionately on certain elite groups—in particular, on the urban working class and the middle class. Such a concentration is typical in the health sector, where the bulk of most budgets goes to supporting curative services in urban hospitals and health centers. Providing data that show the negative impact of such resource-distribution schemes on health, as well as their low cost-effectiveness, may help politicians change priorities within the health sector.

In some countries, pressure to retain physician control has slowed progress in making family planning services widely available, although this is, to a certain extent, a phenomenon of the past. Numerous studies demonstrate that trained nonphysicians can safely and effectively provide barrier and hormonal contraceptives, as well as insert IUDs, for the great majority of couples. Thus, wherever a shortage of physicians, a concentration of doctors in urban areas or a preoccupation with other physician tasks limits people's access to needed services, programs should move towards delegating responsibility for service delivery to appropriately trained nonphysicians. At the same time, programs should rely on doctors to handle serious side effects or to offer methods that can only be safely provided by physicians.

Historically, many programs began by making services available in freestanding, generally urban clinics that were readily accessible to only limited segments of the population. In parts of Africa, access is even further restricted because a significant portion of the clinical infrastructure is operated by religious groups opposed to family planning. In most contexts, therefore, given the limited infrastructure and the difficulty sometimes experienced in obtaining family planning services at multipurpose facilities, clinics should be supplemented by the activities of outreach workers and by other sources.

Many successful programs have developed "multisource" strategies that supplement clinic services with postpartum family planning services, community-based distribution networks and private, for-profit and social marketing approaches to further government goals. Such approaches have significantly increased prevalence, especially in rural areas and, on a provisional basis, in countries otherwise considered resistant to family planning, such as Bangladesh, Haiti, Kenya and Zaire.

The private sector has proved to be a vital adjunct to government efforts to extend contraceptive services. Nongovernmental organizations (such as family planning associations), private pharmacies, physicians and social marketing programs are responsible for half or more of contraceptive use in many countries, especially Brazil, Colombia and Mexico.[3] The key element in the use of either social or regular commercial marketing to extend contraceptive availability is the tremendous number and geographic dispersion of potential outlets. In Bangladesh, for example, more than 100,000 retail outlets could participate in contraceptive delivery, as could the ubiquitous *sarisari* stores (small variety shops) in the Philippines. Other efforts to engage the private sector in family planning have entailed paying special fees to private physicians for the delivery of services (as in the Republic of Korea), creating communal pharmacies and establishing service delivery at the workplace with economic backing from businesses or unions (as has been done in Indonesia and Turkey).

However, increasing contraceptive availability is not simply a matter of increasing the number of service sites, but also of providing an extensive variety of contraceptive options. Research indicates that, at least under conditions of low-to-moderate prevalence, the provision of additional contraceptive alternatives increases use rates.[4] Nonetheless, in India, Nepal, several South Pacific nations and numerous African countries, program progress has been restrained by limited contraceptive choice.

The strategic answer to the question about the optimal method-mix is not simply to make all methods extensively available, however. Where administrative capacities are not highly developed, concentrating on making a few methods widely accessible may yield better results. Indonesia is a good example of a successful program that has concentrated on offering relatively few methods. Once such success has been achieved, however, other methods must eventually be made available so that contraceptive prevalence does not plateau at an undesirably low level. Even a relatively successful program like Indonesia's might achieve more if contraceptive sterilization were more widely available.

Finally, making a wide range of methods available should not be taken to mean offering many variants of each method. Programmatic evidence suggests that providing too many types of oral or injectable contraceptives leads to complicated logistics, shortages, frequent changes in prescriptions, confusion among providers and clients and eventual discontinuation of use.[5]

- *Acceptability of services* is a concept that grows out of the recognition that family planning services should be adapted as much as possible to local customs and preferences. This has in turn led to a wealth of research on just what the "user perspective" may be.[6] Concrete actions toward improving the acceptability of family planning services have been taken in some of the more successful programs, but are still lacking in many. These include selecting types of service agents and a contraceptive mix that accord with cultural patterns; respecting women's privacy, modesty and desire for anonymity; aligning the hours in which services are offered with community schedules; reducing waiting times; removing impediments to staff-client communication; and revamping educational materials so that they are more responsive to the concerns of clients and more easily understood.

Contributing to acceptability is a collection of factors loosely grouped under the rubric "quality of care." Program managers face an important challenge in improving quality by ensuring that, for example, personnel adhere to service norms and standard procedures, are alert to contraindications and side effects and are willing to counsel clients adequately on contraceptive alternatives. Raising the quality of family planning care should help improve both the acceptance of services and the continuation of contraceptive use. Other mechanisms for improving quality are acquiring and distributing adequate equipment and supplies, promptly and widely disseminating to all staff members the most up-to-date information on the contraceptive methods employed in the program, updating norms and procedures and conducting refresher training for service personnel.

• *Community participation* in family planning programs is an issue that has received considerable attention. The premise is that if the community is directly involved, services are more likely to be offered in accordance with local preferences and thus are likely to be more widely accepted. Community participation, as it is used here, refers to a broad spectrum of activities, ranging from encouraging local organizations and individuals to both become involved in service delivery and take on a greater proportion of service costs under the direction of the government or nongovernmental organizations to empowering the community by making it responsible for designing and operating services.

In practice, community participation is often difficult to implement. On the one hand, how much responsibility communities want or will accept is often unclear. Community members may resist the idea of managing services themselves, perceiving this arrangement as inferior to what is provided to more privileged groups. They may also object to bearing financial responsibility for services if they perceive that more privileged groups do not. On the other side, governments frequently feel threatened by the empowerment of any group outside official structures. Additionally, there are no universal formulas for determining who should be involved at the local level. In communities in which factions are important, the wrong choice can lead to reduced access to services for "out" groups, whereas the choice of politically well-connected individuals sometimes leaves the majority mistrustful of the service. On the other hand, selecting individuals who are not politically well-connected or attempting to develop community organizations outside official ones may create government resistance.[7]

Solving these problems requires analysis of existing community organizations and human resources in search of the elements that are willing to participate in a sustained, honest manner and that have widespread prestige and acceptability. Investigation can help determine just what responsibilities the community is willing to carry out over short and extended periods. Involvement of the private sector and of social marketing can sometimes circumvent political suspicions. Finally, operations research is needed on economically sound incentive systems to motivate community members such as village health workers (who often are expected to devote considerable time to the program) to continue in their jobs without placing an unacceptable financial burden on the program.

• *User incentives and disincentives* have been introduced in some countries to motivate men and women to practice family planning. Whether they are aimed at reducing or increasing fertility, whether they are oriented to individuals, couples or communities, and whether they are administered by governments or independent, nongovernmental organizations, incentives and disincentives have often been controversial. However, they have also been recognized for some years as playing, at least potentially, an important role in family planning programs.

All incentives and disincentives characteristically consist of either a reward or a penalty tied to some kind of fertility behavior. Incentives may be in cash or may encompass gifts, clothing or food; maternity leave, benefits or allowances; low-interest loans and reduced taxation; priority for housing, education or health services; employment opportunities for women and future employment opportunities for children; land-development schemes and eligibility for participation in income-generating activities; social security benefits and old-age pensions; and special awards, ranging from lottery tickets to certificates.

Both relatively small and large payments have been used as incentives. The small-payment approach is based on the assumption that potential clients will be attracted by offers of immediate compensation for lost wages, the cost of transportation and other costs incurred in accepting a family planning method; the incentive is usually a one-time cash payment. The large-incentive approach assumes that couples desire numerous children, especially sons, for social and economic reasons, and that only substantial economic incentives—such as periodic payments for not having additional births; special attention, including free medical care and admission of children to better schools; social security schemes; higher priority in housing or loan applications; and savings bonds—can change their desired family size.

Community incentives are based on the assumption that entire villages can be motivated to participate in family planning programs linked to visible improvement in the quality of life. Typically, communities are rewarded for raising contraceptive prevalence rates above a certain base level or for reducing fertility rates in accordance with a predetermined formula. Rewards are often in the form of a revolving capital fund from which villagers may borrow to finance income-generating activities.

Although offers of incentives and disincentives are becoming more common, they are not widespread, tending to be most prevalent in Asian countries with a relatively sophisticated infrastructure and a long history of concern over population growth. However, even in Asia, countries without incentive or disincentive programs outnumber those with them. Despite several decades of experience with diverse incentive and disincentive schemes, there is not enough information available to assess objectively the impact of such programs on long-term contraceptive-use patterns and fertility behavior.

Nonetheless, certain factors may indeed improve the effectiveness of incentive and disincentive programs. Such programs must be politically and culturally acceptable and financially feasible, they should offer a combination of several incentives or disincentives and their design should be simple. Adequate supervisory, recording and reporting systems are needed if program officials are to identify problems and monitor the progress of the program, and quantitative analysis should be supplemented by investigation of qualitative aspects, such as client satisfaction and the effects of incentives on the quality of life. In addition, the recurrent financial burden of incentives should be carefully assessed beforehand; once such a program is begun, it may be difficult to withdraw without having negative effects on the family planning program as a whole. The ethical and human rights issues raised by incentives and disincentives are extremely complex; any assessment of them must take into account the social and cultural contexts within which they operate. Ethical issues may best be addressed by maintaining a dialogue between policymakers and the community, so that a consensus can be reached and maintained.

- *Development of an adequate personnel base* is a factor often cited as crucial for the success of a family planning program. It is vital to attract and retain competent and motivated service and managerial personnel at all levels of the program. The challenge of staffing programs with such individuals is complicated in countries where a lack of political support results in the best available talent being assigned to other governmental sectors, where public or private social service funds cannot compete with the rewards of private, for-profit employment (such as in Egypt, Pakistan, the Philippines and Sri Lanka), or where trained workers are very scarce.

Upper management, middle management and clinic-level medical and paramedical personnel are often difficult either to attract or retain. In addition, programs that have advanced to the stage at which community outreach workers are required to motivate the population and to provide service outside the clinics are often faced with the task of "creating" this entire cadre, not infrequently at a time when resources to pay such workers are lacking. The progress of some of these types of programs appears to have been retarded because the personnel selected were in some way inappropriate. For example, sometimes men have served as agents in societies in which women are reluctant to be examined by or to discuss intimate topics with the opposite sex; at times, urban residents have been assigned to work in rural areas or young people (or relatives of political figures) with no credibility have been selected. When individual programs have compared the efficacy of different types of workers, the most effective agents have proved to be those with a background similar to the potential clients, but with some claim to expertise through training and personal experience (typically, married women who have children and who use contraceptives themselves).

Some programs have tried to overcome the shortage and expense of physicians by delegating authority for some forms of service to adequately trained, more readily available and less expensive types of personnel. For example, in Thailand and Turkey, properly trained paramedical personnel have been shown to be able to prescribe most methods, as well as to insert IUDs and follow up with users.

Poor motivation of service delivery and outreach personnel and a lack of a service orientation—two other basic problems—have in some cases been ameliorated through in-service and basic training. If the problem stems largely from the staff's lack of understanding of the health justifications for family planning, more training should help, although there is little evidence to back this assertion. If the problem is one of low salaries, some improvement might be expected from salary increases. Once again, however, there is insufficient evidence on this point, and program managers rarely have much flexibility in this area. Finally, programmatic evidence also indicates that motivation is improved by a supportive supervision system.

Several programs in different regions have attempted to win the loyalty and dedication of fieldworkers and medical and paramedical personnel through special incentive payments to those who deliver family planning services on either a piecework or salary supplement basis. Although in some cases this practice seems to have led to increased productivity, it has also resulted in the refusal of personnel to continue services if special payments must be reduced or eliminated. In addition, other workers have resisted providing such services without receiving similar payments, which may severely limit the service network if the program is unable to offer such incentives on a wide scale. Furthermore, linking payments to the provision of one or only a few contraceptive methods raises the possibility that a worker may try to influence a client to accept the method or methods bearing the premium, thereby infringing on the client's right to free and informed choice. Thus, whenever special incentives for service providers are a part of the program, significant efforts are required to ensure that the payments are provided system-wide and to guarantee that clients' basic rights are respected.

- *Development of an adequate financial base* is essential, since almost all family planning programs suffer to a greater or lesser degree from a shortage of financial resources. To achieve the aims of the program, it is usually necessary to combat resource constraints simultaneously on two fronts: by generating (or in some cases rekindling) political commitment, and by being constantly on the alert for the most cost-effective ways to use resources.

In an ideal strategy, family planning services should be made as widely available as possible through multiple modes of service delivery and should provide as broad a range of contraceptive options as possible. Where financial resources permit, this strategy, already adopted by a significant number of the more prosperous developing countries, would bring about the highest possible contraceptive prevalence in the least time.

Where resources cannot be stretched to pursue all major modes of service delivery, however, difficult strategic choices must be made. Although it is important to determine which modes of delivery provide the most contraceptive protection with available resources, relatively little information on this subject exists. One recent study of 63 projects in 10 countries suggests that contraceptive social marketing and voluntary sterilization are more cost-effective than community-based distribution or full-service clinic programs, but the research covered only family planning services, and the results might have been different had the study included programs that offer maternal and child health services along with family planning.[8]

An increasingly important question is the extent to which public-sector costs can be abated. For example, in countries where programs are already under way, shifting some portion of the burden of public services either to the regular commercial sector or to a social marketing program may represent a sound option, especially where the majority of the public is spontaneously demanding family planning; a number of Latin American and Asian programs may have already reached this stage. Under such an arrangement, public resources can then be focused on serving the last remaining unconvinced or underserved groups in the population as well as those too poor to purchase the service in the private sector.

Where programs are just beginning, developing a private-sector or a social marketing alternative before (or perhaps instead of) developing the public-sector services might be useful. However, further examination of available data is urgently needed to guide decisions about how to balance the resources devoted to the public and private sectors and to clinic distribution with those to community-based or commercial distribution systems. Most experience with social marketing has been in countries where long-standing public-sector (and sometimes commercial) efforts had already accomplished much in terms of informing the public and generating demand. It remains to be seen how well social marketing will fare in environments where this initial groundbreaking has not been conducted. Additionally, social marketing programs are not responsible for the majority of contraceptive prevalence in any country; rather, they simply add another layer of users to those generated by other sources of services. The prevalence level that can be generated by social marketing alone is thus unknown.

Whether programs are fortunate enough to be able to operate through all modes of service delivery or are obliged to select only a few alternatives, financial constraints normally limit operations. Hence, the search for more cost-effective ways of carrying out basic functions must be continuous. Cost-reduction options identified in some programs include relegating functions to less expensive personnel, charging for services, experimenting with alternatives to government compensation for outreach workers, using more economical modes of transportation and relying on more cost-effective techniques of training and supervision. Finally, programs may opt for "appropriate technology," such as using existing village buildings instead of constructing new ones, employing locally made products (e.g., simple examination tables, safe-birth kits for traditional birth attendants and oral rehydration salts) and depending in most cases on minilaparotomy rather than on laparoscopy for sterilizations.

Administrative Issues

Regardless of the decisions made about broad strategic options, supportive functions such as logistics, supervision, management information systems, research and evaluation, and training must be reinforced in the coming decade if maternal and child health and family planning programs are to have a reasonable chance of success.

- *Logistics* deficiencies (that is, shortages of equipment, drugs and contraceptive supplies) are encountered in many programs and can be documented through progress and supervision reports, along with special checks on conditions at service points. Regardless of how successful a program has been in generating demand, it will lack impact if it cannot maintain a continuous supply line. Thus, one of the principal operational challenges in the coming decade is to establish adequate logistics systems.

Logistics are poor in many countries, largely because of financial constraints on purchasing, inadequate inventory information and requisition systems, ill-defined procedures for buying and shipping, inefficient warehousing practices, lack of transportation and pilferage. Attempted solutions to these problems have included efforts to encourage local production of equipment and supplies and to develop better stock information systems and ordering and warehousing procedures. In some instances, nongovernmental organizations have been placed in charge of government logistics; for example, occasionally, the responsibility for supplying government service points has been turned over to efficiently run private purveyors of such items as over-the-counter medicines or soft drinks.

- *Supervision* at all levels, and especially at the level of service provision, is a recurring problem in family planning programs: It may be too infrequent or perfunctory, contributing to the abandonment of posts by volunteer workers and to demoralization, low productivity and unacceptably low quality of services among salaried personnel. In general, programs that emphasize a well-functioning supervisory system have been more successful than those that have not.[9]

Several factors typically constrain effective supervision. There may be too few supervisors for the number of agents to be supervised (especially in community-based distribution programs), usually as a result of budget problems, and the contact between worker and supervisor may thus be too brief. Geographic dispersion of family planning workers also contributes to inadequate supervision, especially in areas where transportation is a problem. Furthermore, supervisors may not be adequately trained, and as a result "supervision" may be reduced to inventory checks and verification that workers are at their posts. When supervisors lack the power to actually improve working conditions and lack the training to help workers improve their skills, supervision may be perceived as unhelpful, if not punitive. On the other hand, some programs (such as Brazil's) have begun to discover that once service personnel have mastered their basic responsibilities, less frequent supervision will cause no decline in productivity.[10]

Solutions to the problems of supervision include delegating authority to supervisors to resolve typical problems in the working environment, providing special training in supervisory skills (including instruction on how to improve the technical skills of service personnel through on-the-spot education), attempting to develop alternative, more affordable systems for transporting supervisors to the field and identifying the most cost-effective methods of supervision at different program levels.

- *Management information systems* that provide insufficient or inaccurate information on the flow of supplies, on personnel and training and on service statistics represent a significant obstacle to effective management in many family planning programs around the world. Some improvement has been seen in recent years (in Indonesia and Mexico, for example), but many program managers remain hampered by the absence of accurate and timely information, and their decision-making takes place in a vacuum.

In the particular case of service statistics, many programs fail to collect information on the most basic indicators—numbers, types and locations of service points, numbers of new acceptors and numbers of contraceptives distributed. In addition, information may be assembled only after such extensive delays and with so many inaccuracies that it is relatively useless. Management information may also be restricted to the national level, despite its potential value to managers at the province, district and local levels. These types of problems have been observed in any number of developing countries, including the nations of the South Pacific, El Salvador, Liberia, Pakistan, the Philippines and Sierra Leone.

Attempts to improve management information have included efforts to simplify existing systems so that they provide accurate, timely information on a few basic variables; to introduce simplified techniques (such as cluster-sample interviews, using portable data-entry equipment) that rapidly generate information on important indicators such as contraceptive prevalence; and to train management, supervisory and service personnel in the correct production and use of information. Training courses teaching epidemiological approaches that focus on coverage rates, alongside those emphasizing indicators of the volume of activity, have also been valuable.

- *Research and evaluation* have been viewed by some authors as a part of management information, but they deserve greater visibility. Program managers and researchers often lament that the findings of research and evaluation too rarely enter into the decision-making process. Yet, in Thailand, for example, the use of evaluation data in decision-making has been shown to be positively correlated with program success.[11]

Ideally, managers and researchers should jointly design research and evaluation plans appropriate to the program. In their early stages, programs need baseline data on the knowledge, attitudes and practices of the target population, estimates of the need and demand for services and inventories of existing (or potential) service points and available personnel. Additionally, research on innovative approaches—for example, those aimed at adolescents or those employing paramedical personnel—can often provide the evidence to justify making them permanent.

As programs progress, both the quantity and quality of services need to be monitored to determine why approaches succeed or fail. Also helpful is operations research on the cost-effectiveness of options open to managers, such as the contraceptive method-mix, modalities of service delivery, length and type of training, frequency and content of supervision, mix of services to be offered by outreach workers, types of outreach workers to be hired and compensation schemes for village health workers. Clinical trials of experimental contraceptive methods must be conducted, as well as research to smooth the introduction of new methods and to monitor the safety and efficacy of all methods in general use. Finally, it is necessary to conduct periodic assessments of whether health and demographic objectives are being achieved.

- *Training* is a major need for all family planning programs, whatever their stage of development: Medical and paramedical personnel must be given basic training, in-service staff must receive their first exposure to family planning, cadres of village health workers must be developed, already trained workers must receive periodic refresher courses and all staff must be given special training on changes in administrative procedures or on recently introduced contraceptive methods.

Despite considerable progress in a number of countries, the absence or inadequate coverage of relevant material in medical and paramedical schools still imposes a heavy in-service training burden on family planning programs. Additionally, in many countries, because of the large numbers of in-service trainees to be reached, a multitiered, decentralized training strategy is inevitable. Too often, however, greater attention is given to the quality of central-level training than to provincial or district-level training. Key individuals may be sent outside the country for training, with the attendant risk that their current activities will be disrupted and that they may not return. Training may also not be synchronized with the availability of positions, so that trainees may find their newly acquired skills diminished or lost through a lack of opportunity to use them.

Another chronic problem in many programs is the difficulty in convincing senior officials to allow lower level staff to leave their posts to attend training sessions, particularly where medical or paramedical staff are in short supply. Moreover, resistance is often compounded and costs unnecessarily elevated when all members of a cadre are assigned such training, even though only a portion really need it. Whether for reasons of time or budget, many programs opt for courses that are too short to permit adequate transfer of requisite skills and knowledge and overload attendees with general material, some of which is extraneous to their actual responsibilities.

Further efforts are needed to include and improve the family planning content in medical and paramedical curricula; to develop service norms and clear job descriptions for all levels of personnel, and to base training on them; to lobby for sufficient training time; to focus training on those most in need; to conduct research on questions of content and duration of training; and to send selected service personnel abroad for short-term practical training until demand for particular methods increases to a point at which local instruction can be undertaken. Another promising approach for improving training is greater reliance on self-instruction (either written or in audiovisual cassettes), which can be reinforced by relatively short group-training sessions.

Special Challenges

Family planning programs have typically focused, at least during initial stages, on married women, and not infrequently on those of relatively high parity. The needs of other groups have been less thoroughly addressed, and sometimes neglected altogether. In the 1990s, many programs will no doubt identify as high priority these previously marginal groups. In addition, both long-standing and relatively recent health problems—especially the rise of AIDS and other sexually transmitted diseases (STDs)—constitute special challenges for the coming decade.

- *Adolescent reproductive behavior* is an issue with great potential for controversy in most societies. Both for this reason and because the task of delivering services to other, less controversial groups has been so large, the needs of men and women 10–19 years of age have received relatively little priority. During the 1970s and especially the 1980s, though, a number of programs serving older women have progressed to such a degree that adolescents have inevitably emerged as one of the remaining few underserved groups.

Thus far, family planning advocates have responded to the often emotionally charged topic of adolescent reproductive behavior simply by documenting the incidence of pregnancy and its negative impact. Other studies have been directed at adolescent contraceptive knowledge and behavior, with a view to designing appropriate family planning services. The least progress has been made in providing services to adolescents; where this has happened at all, it has tended to be on a modest, experimental scale in a few major urban areas. Although additional research is required to document the seriousness of the problem in countries where the potential for controversy remains high, the main challenge for the 1990s is increasingly that of developing services for teenagers.

Information on aspects of the operation of adolescent programs will be important in the 1990s, but currently such information is only sketchy. It is unclear whether separate services must be established to win the acceptance of young people or whether adolescents can be reached through the same types of services used for the general public; whether programs can use traditional agents to promote services, or if special promotional networks must be established; and whether unified messages and approaches will be adequate for the adolescent population, or if segmentation will be required to reach both the males and the females, the married and the unmarried, those in school and those out of school, and those who are employed and those who are unemployed. Other issues necessary to deal with in the 1990s are how to change traditional attitudes favoring early childbearing and how to overcome the ambivalence (or actual resistance) of service personnel toward the provision of services to adolescents.

- *Male involvement* in family planning is a concept that has become widely accepted, but there has been little program experience regarding how males can be brought more directly into the family planning process. Most programs have been designed (at the community as well as the clinic level) primarily on a female-to-female basis, for counseling, education and the provision of services and supplies.

Slow progress in involving males may be at least partially explained by a lack of clear understanding of the desired outcome. To date, most efforts have been limited to attempts to win men's support for their spouse's use of contraceptives, by exposing them to information on and arguments about the negative impact of unregulated fertility on the family's health and socioeconomic status. Other educational approaches have emphasized the importance of encouraging responsible male behavior, while still others have promoted vasectomy or condom use. There is only scanty evidence on the efficacy of such efforts—particularly that of gaining male support for female contraception—even in the minority of programs in which they have been undertaken. Many advocates clearly believe that something beyond mere male acquiescence is required for success. To make real progress will require a more specific definition of the desired outcome and more rigorous testing of the strategies for bringing it about.

- *Induced abortion* remains highly controversial, and has become a matter of great concern in developing countries because of the serious threat it poses, under certain conditions, to maternal health. Between 25 and 40 million induced abortions are believed to occur annually in the developing world—approximately one for every 3–5 live births.[12] An estimated 15–20 million of these abortions are performed legally and under relatively safe conditions, whereas 10–20 million occur where abortion is illegal or where hygienic, affordable services are relatively inaccessible. Complications of abortions performed under unsafe conditions may be responsible for anywhere from 10 to 50 percent of maternal deaths in developing countries.[13] In absolute terms, the toll may reach between 100,000 and 150,000 women annually.

Mortality due to induced abortion could be reduced substantially by means of improving health care. In countries where complications of induced abortion account for a large number of maternal deaths, curative health services for treatment of septic and incomplete abortion should be made available. Family planning services can be promoted and expanded so that recourse to abortion is lessened. Finally, in countries where abortion is legally permitted, the recommendation of the 1987 Nairobi Conference on Better Health for Women and Children through Family Planning—that "good quality abortion services should be made easily accessible to all mothers"[14]—should be heeded.

- *STDs and AIDS* have assumed epidemic proportions in many countries, including some with the least resources in manpower, institutions and money to cope with the problem. Therefore, despite the concerns of some administrators about overburdening personnel and diluting their dedication to their primary responsibilities, maternal and child health and family planning programs will increasingly come under pressure to address the accelerating menace of STDs in general, and AIDS in particular. Promotional home visits, clinic educational efforts and family life and sex education programs present natural opportunities to educate the public on prevention of STDs.

Additionally, the provision of condoms and spermicides, increasingly seen as one line of defense against STDs, has been a traditional responsibility of family planning programs, and a role that may be expected to increase, particularly as the campaign against AIDS intensifies. In this context, the roles of the family planning worker may become more complicated: The methods that confer the greatest protection against STDs are not those that are most effective at preventing pregnancy; thus, family planning workers may find that they have to prescribe or provide one method for protection against disease and

Table 1. Developing countries and their contraceptive availability scores, by contraceptive prevalence rate and whether reliance on traditional methods is high or low

Prevalence and reliance on traditional methods	Country	Score
0–20%	Afghanistan	5
	Benin	5
	Burundi	3
	Cameroon	4
	Cote d'Ivoire	5
	Ghana	4
	Haiti	22
	Iraq	4
	Kenya	12
	Lesotho	2
	Liberia	8
	Mauritania	5
	Nepal	16
	Nigeria	11
	Pakistan	16
	Rwanda	3
	Senegal	10
	Sudan (North)	0
	Yemen	5
21–35%		
High*	Bangladesh	41
	Bolivia	2
	Botswana	17
Low	Egypt	21
	Grenada	u
	Guatemala	30
	Guyana	25
	Honduras	29
	India	36
	Jordan	24
	Nicaragua	19
36–50%		
High*	Paraguay	12
	Peru	17
	Philippines	41
	Zimbabwe	16
Low	Antigua	u
	Barbados	u
	Dominica	u
	Dominican Rep.	40
	Ecuador	33
	El Salvador	46
	Fiji	35
	Indonesia	36
	Morocco	20
	St. Kitts-Nevis	u
	St. Vincent	u
	South Africa	u
	Tunisia	45
	Venezuela	19
>50%		
High*	Lebanon	27
	Malaysia	40
	Mauritius	31
	Sri Lanka	47
	Turkey	22
Low	Brazil	34
	China	58
	Colombia	52
	Costa Rica	34
	Hong Kong	59
	Jamaica	45
	Martinique	u
	Mexico	45
	Montserrat	u
	Panama	56
	Rep. of Korea	59
	Singapore	59
	Thailand	50
	Trinidad & Tobago	36

*High reliance on traditional methods is defined as more than 25 percent of all current contraceptive users.

Notes. Availability scores indicate the level of availability (on a scale of 0–60) of male and female sterilization, oral contraceptives, IUDs, barrier methods and legal abortion. Availability data are from 1987. Prevalence data range between 1980 and 1988, although most are from 1984–1985. u=unavailable.

Sources: **Contraceptive prevalence**—see reference 2. **Availability scores**—"Access to Birth Control," 1987 (see reference 15).

a second for family planning. Given the importance of the condom in disease prevention, workers may have to deal increasingly with males, in addition to their usual largely female clientele.

Finally, although family planning affords opportunities for combating STDs, it also lends itself to the inadvertent spread of disease. All body-invasive procedures in family planning, including IUD insertion, sterilization, injections and pelvic examinations, have the potential for spreading STDs—and particularly the AIDS virus—when carried out under unsanitary conditions. Thus, managers will be faced with the task of preparing staff both for adding STDs and AIDS to existing education and counseling programs and for improving hygienic conditions in the provision of services. Doubtless, too, procurement and distribution of increased quantities of condoms and spermicides will require greater financial outlays and better logistics systems than had previously been expected.

Country-Specific Strategies

To some extent, the strategic, administrative and special challenges described above will confront program managers in all developing countries in the coming decade. Nevertheless, the data in Table 1 (page 133) suggest that based on their patterns of contraceptive use and availability, developing countries can be grouped into at least four categories, with each warranting a somewhat different strategic emphasis.

The first group, where contraceptive prevalence is less than 20 percent, is composed of the great majority of African nations for which data are available; in addition, it is likely that most of those countries for which actual prevalence data are not available (such as Afghanistan, Haiti, Iraq, Nepal, Pakistan and Yemen) also fall into this group. With several exceptions (Ghana, Haiti, Kenya, Nepal, Pakistan and the Sudan), the nations in this group are at the incipient stage of program development. All countries in this group are considered "weak" or "very weak" in terms of overall family planning program effort and contraceptive availability.*[15]

For this group of countries, with few exceptions, first priority should be given to activating existing clinical, medical and paramedical networks to serve as bases for service delivery, referrals, and training and supervision for incipient outreach, community-based or commercial systems of service delivery. Especially in Africa, shortages of staff for such functions make training of key national, provincial and district-level personnel in basic management a crucial activity. Another high priority is educating instructors to train personnel already part of the health infrastructure in providing family planning services. Given the limited geographic coverage of clinical networks and their restricted capacity for delivery of any type of health service, further expansion will be required in most cases to achieve significant health or demographic impacts. In these countries, however, resource constraints make it almost inevitable that programs will face difficult choices on the additional modes of service delivery to be employed and the degree to which they should be emphasized. Analysis of the cost-effectiveness of local options will be critical if the impact of family planning programs is to be maximized with the limited resources likely to be available.

A second group, where contraceptive prevalence is between 20 and 35 percent, is made up of at least 11 nations, including some—Bangladesh, Egypt and India—with large populations. These countries may be further subdivided by the degree to which their people rely on traditional and less effective methods. (High reliance is arbitrarily defined as the use of such methods by more than 25 percent of current users.) With the exception of Bolivia, the availability scores of the countries in this entire group exceed those of all countries in the first group except Haiti.

On the basis of their availability scores, all members of this second group, along with Ghana, Haiti, Kenya, Nepal and Pakistan, appear to have a better foundation of basic medical and managerial support resources than those of the rest of the first group. Thus, the emphasis here should be placed on a major, general expansion of the availability of services, through the extension not only of clinical networks but also of community-based, commercial marketing and other private networks, in accordance with the probable cost-effectiveness of local options and of the availability of funds. Implementation issues relating to broad-scale training, logistics, information systems and supervision will be of primary importance.

Each of the two groups contains some countries with long-standing programs that have been relatively unsuccessful to date. Most of these overemphasize one method (such as condoms in Pakistan and sterilization in India and Nepal), offer relatively low-quality services and have poorly motivated personnel and bad logistics; in addition, despite considerable efforts, family planning services in these countries remain persistently inaccessible. Several of these nations also have large subpopulations whose cultures are viewed as unreceptive to family planning. Since pilot projects have shown that high-quality services, sensitively offered, can win acceptance among such populations, more should probably be done to make services culturally acceptable and attractive to individual clients, as well as to inform and motivate the population.

In most of the countries where contraceptive prevalence is between 36 and 50 percent, services are relatively accessible (in the Dominican Republic, El Salvador, Fiji, Indonesia, the Philippines and Tunisia, for example). However, availability is still below the levels found in the programs with the highest prevalence rates. Thus, a somewhat more modest extension of services than in the second group seems called for, except in countries such as Paraguay, Peru and Zimbabwe, where, because of limited accessibility, a rather highly motivated population is using relatively ineffective methods. In this subgroup, a major expansion is indicated. Otherwise, most initiatives should be focused on underserved groups such as adolescents, remote rural populations and pockets of marginal urban dwellers. Some additional extension of the service network will be required as the numbers of reproductive-age couples grow. In several of these countries, although service points are relatively accessible geographically, poor logistics, poor service, inferior care and inconvenient hours discourage women from using contraceptives, so improving the quality of care should be a major concern.

Finally, there is a group of nations where prevalence is over 50 percent. In these countries, multiple delivery channels have generally been well developed. (One exception is Brazil, where the public sector has only recently begun providing family planning services on a national basis through the health system.) Neither the development of new delivery systems nor a broad expansion of existing ones would seem to be a priority in these nations, except perhaps in countries such as Turkey, where there is very high reliance on traditional methods and relatively low accessibility to services.

A number of countries in this group and

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*Availability scores are based on the replies of family planning and population experts who were asked to describe the availability of male and female sterilization, oral contraceptives, IUDs, barrier methods and induced abortion. The maximum availability score possible was 60. For more information on the scoring, see "Access to Birth Control," 1987, reference 17.

several where prevalence is between 36 and 50 percent are candidates for the gradual "privatization" of services, leaving governments to reach the last underserved populations and those too economically disadvantaged to afford private-sector services. Regardless of whether privatization takes place, comparatively little emphasis on "demand creation" would seem to be required in the majority of these countries. At the same time, however, in all remaining public-sector and private-sector programs and in any new private-sector ones, considerable attention could profitably be directed to improving the quality of services, especially in screening for contraindications, monitoring for side effects, providing a variety of contraceptive alternatives and ensuring that the methods used are appropriate to the client's particular stage in the reproductive cycle.

Conclusions

Further improvements in maternal and child health and decreases in population growth rates in developing countries will depend on the extent to which the coverage and quality of maternal and child health services in general, and family planning services in particular, can be improved. Such improvements must be achieved largely with existing strategies and technology; no major breakthroughs are foreseen for the coming decade.

The resources needed to support family planning services must increase substantially if contraceptive prevalence is to rise as much as is needed. In addition, political commitment to family planning, which has waned in some countries and regions, must be rekindled. The selection of contraceptive methods available in most programs needs to be expanded: Health authorities and service providers must be convinced to add alternatives to the repertoire of most programs, and to introduce new methods in ways that do not disturb current program efficiency. Information, education and communication activities will have to be strengthened as well, especially in countries where large segments of the population remain uninformed or unconvinced about the benefits of family planning.

Considerable effort will have to be devoted to increasing the availability of family planning services, including the wider use of community-based distribution and social marketing programs. A related issue is privatization—encouraging the private sector to assume a greater share of the responsibility for the provision of family planning services. The private sector will doubtless play an important role in the 1990s. In countries where knowledge of and demand for contraceptives is high, governments should consider delegating a considerable proportion of responsibility to the private sector, while focusing government resources on underserved subgroups. Any phase-out of government services will have to be carefully planned, however, so that availability does not fall.

With the possibility that funding for population activities will be less than is required in the next decade, there will be a greater need in the 1990s for coordination between assistance agencies, as well as for changes in emphasis. Up until now, external agencies have not linked assistance with program effectiveness; in fact, the more successful programs have been expected to assume ever greater self-sufficiency, while the weaker programs have been targeted for greater support. If resources fall short of what is needed in the 1990s, funding agencies might consider withholding support from programs that have proved chronically unwilling to assign a high priority to family planning or that have used resources in less cost-effective ways, and instead channel resources to the more committed and efficient programs.

The 1990s will certainly see a need for improvements in the acceptability and quality of the family planning services. Program managers will have to identify the particular concerns of target populations and restructure the information content of publications and counseling accordingly, to offer a range of methods that is culturally appropriate and sufficient for the client population's needs, to improve the quality of counseling and service delivery, to reduce waiting time and to improve communication between family planning personnel and clients.

Finally, women have constituted an underused resource in primary health and family planning programs. Rather than being seen simply as the passive beneficiaries of services or as suitable only for the lower level responsibilities in a program, women must become the designers and managers of family planning programs in the developing world. Despite substantial evidence that women can be effective agents of change in the community, policymakers and program managers have often failed to take advantage of the contributions women can make in enhancing the acceptability and quality of maternal and child health and family planning services.

References

1. United Nations (UN) Population Division, *Levels and Trends of Contraceptive Use as Assessed in 1988*, ST/ESA/SER.A/110, New York, 1988.

2. W. P. Mauldin and R. J. Lapham, "The Measurement of Family Planning Inputs," in R. J. Lapham and G. B. Simmons, eds., *Organizing for Effective Family Planning Programs*, National Academy Press, Washington, D.C., 1987, p. 164.

3. J. A. Ross et al., *Family Planning and Child Survival in 100 Developing Countries*, Center for Population and Family Health, New York, 1988.

4. M. E. Gallen and W. Rinehart, "Operations Research: Lessons for Policies and Programs," *Population Reports*, Series J, No. 31, May–June 1986.

5. G. B. Simmons and R. J. Lapham, "The Determinants of Family Planning Program Effectiveness," in R. J. Lapham and G. B. Simmons, eds., 1987, op. cit. (see reference 2).

6. R. J. Lapham and G. B. Simmons, 1987, op. cit. (see reference 2); and *Family Planning in the 1980s: Challenges and Opportunities*, The Population Council, New York, 1981, Chapters 17–21.

7. Maternal and Child Health Unit, Division of Family Health, "Report of the World Health Organization (WHO) Consultation on Policy Aspects of Community Participation in Maternal and Child Health and Family Planning Programmes," Harare, Zimbabwe, Oct. 15–17, 1986.

8. S. C. Huber and P. D. Harvey, "Family Planning Programs in Ten Developing Countries," *Journal of Biosocial Science*, **21**:267, 1989.

9. G. B. Simmons and R. J. Lapham, 1987, op. cit. (see reference 5).

10. M. E. Gallen and W. Rinehart, 1986, op. cit. (see reference 4).

11. G. B. Simmons and R. J. Lapham, 1987, op. cit. (see reference 5).

12. C. Tietze and S. K. Henshaw, *Induced Abortion: A World Review, 1986*, The Alan Guttmacher Institute, New York, 1986.

13. The World Bank, WHO and UN Fund for Population Activities, *Preventing the Tragedy of Maternal Deaths: A Report on the International Safe Motherhood Conference*, 1987, p. 16.

14. M. Black, ed., *Better Health for Women and Children Through Family Planning: Report on an International Conference*, The Population Council, New York, 1988, p. 39.

15. W. P. Mauldin and R. J. Lapham, 1987, op. cit. (see reference 2); and "Access to Birth Control," Population Briefing Paper No. 19, Population Crisis Committee, Washington, D.C., Oct. 1987.

Resumen

La expansión de los servicios de planificación familiar en la década de los 90 demandará no sólo mayor financiamiento sino también distintos enfoques y mejor planificación y funcionamiento de los programas. El análisis y evaluación llevado a cabo por el Fondo de las Naciones Unidas para Población (FNUAP) llega a la conclusión de que se necesitan un número de estrategias comprensivas para el éxito de los programas en el futuro. Estas estrategias incluyen fortalecer el compromiso político,

(Continued on page 159)

Reproductive Risks and Intentions In Six Countries in Sub-Saharan Africa

In Senegal, 56 percent of women expressed the intention to limit or space births, while among the other five countries this proportion ranged from 71 to 88 percent. The large majority of these women expressed the desire to space.

By Scott R. Radloff, Barbara H. Seligman, Judith R. Seltzer and Richard M. Cornelius

Summary

An analysis of Demographic and Health Survey (DHS) data from six Sub-Saharan countries found that reproductive risk factors (age, parity and interval since last birth) were highly correlated with women's intentions to limit births. Women who had had four or more live births were as much as 79 percent more likely than lower parity women to express a desire to have no more children. Women who were educated, those who were 35 or older, those who had some awareness of family planning methods and those who had a living male child were also more likely to want to limit their births.

In Zimbabwe and Botswana, a number of factors were also associated with the desire to delay the next birth. Women who had had a child within the two years preceding the survey wanted to delay their next birth 13 months longer than those who had not given birth recently, and women who had a living male child wanted to wait longer (by seven and nine months, respectively) than those without a living son. In Zimbabwe, women with at least some secondary education wanted to delay their next birth nearly seven months longer than those with less education, and in Botswana, women with at least some primary education wanted to wait eight months longer than women with no education. Women who knew two or more family planning methods without prompting wanted to wait seven months (Zimbabwe) and 11 months (Botswana) longer than those who knew fewer than two.

Introduction

Although population growth and family planning have been sensitive issues in the countries collectively known as Sub-Saharan Africa,[1] notable changes have occurred at both the policy and the individual level over the last 15 years.* In 1974, only three of these countries had national policies aimed at expanding family planning services and reducing high levels of fertility. Today, such policies have been enacted in six countries, have been drafted but not yet officially approved in five, and are being drafted in 12 more.[2] Further, a United Nations survey reveals that the governments of 39 out of 45 African countries now support family planning for health reasons and 27 of these 39 also support family planning for demographic reasons.[3]

Changes on the individual level have been more difficult to document because of the relative dearth of demographic data for Africa. However, such data have increasingly become available through World Fertility Surveys (WFS), Contraceptive Prevalence Surveys (CPS) and most recently, Demographic and Health Surveys (DHS). Eleven African countries were surveyed during the first phase of the DHS, and 10–12 more will be included in the second phase. The data derived from these surveys allow us to assess the character, levels and trends of reproductive behavior and intentions.

Table 1 summarizes available data on contraceptive prevalence and reproductive intentions in Sub-Saharan Africa. In most of these countries, fewer than 10 percent of married women of reproductive age are using modern methods of contraception. In Africa as a whole (North and Sub-Saharan Africa), the current level of contraceptive prevalence is about 11 percent, according to United Nations estimates. This compares with estimates of 45 percent in both Asia and Latin America. Important differences can be obscured by these regional estimates, however; for example, prevalence in East Asia is 73 percent, compared with 26 percent in South Asia.[4]

Constraints to increased contraceptive practice are discussed extensively in the literature.[5] Some of these are factors affecting demand for family planning: the high value placed on children; traditional marriage practices, notably payments of bridewealth or bride-price, which link status within the lineage to the number of offspring produced in the marriage; high rates of infant and child mortality; the practice of child fostering, which provides a means of diffusing or redistributing the costs of raising children; and generally low levels of social and economic development. Factors that limit access to services, particularly the lack of national health and family planning programs in many African countries, also inhibit contraceptive use.

Despite low levels of contraceptive prevalence in Africa, there are indications that a transition to higher levels is possible and in some cases is now under way. Small-scale operations research projects have demonstrated that family planning use can be significantly increased, even in nonurban areas, by improving access to family planning information and services.[6] Where such programs have been in place for some time, national levels of prevalence have generally increased. As Table 1 shows, use of modern methods of family planning in Botswana, Kenya and Zimbabwe has increased over the past 4–5 years, from 19 to 32 percent, from 10 to 18 percent, and from 27 to 36 percent, respectively. On the other hand, the use of modern methods in Ghana has decreased slightly over the last decade.

Apart from trends in actual contracep-

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*Sub-Saharan Africa is made up of the 42 countries that lie to the south of the North African states of Morocco, Algeria, Tunisia, Libya and Egypt. Throughout this article, unless otherwise noted, "Africa" refers to Sub-Saharan Africa.

tive use, there are signals that women's childbearing preferences are changing. Women's statements about whether they plan to have more children and, if so, when, are one measure of change, which we refer to as reproductive intentions. Women who say they want no more children are usually classified as "limiters," and those who prefer to delay their next birth two or more years are classified as "delayers." The potential demand for family planning, then, is the sum of these two groups, if we assume that those desiring to delay their next birth for two or more years should practice some form of family planning. Because this measure is defined in terms of time, it has more direct relevance for immediate behavior than other measures of potential demand for family planning, such as ideal family size.

Table 1 presents information on reproductive intentions in African countries for which survey data are available and, for comparative purposes, in selected developing countries in other areas of the world. In most of Africa, as in other regions, potential demand for contraception comprises more than 50 percent of women in union and of reproductive age. The composition of demand, however, varies greatly: In Africa, most of the demand results from a desire to delay future births, while in other regions, the desire to limit is more common. Only in Botswana, where there are 1.3 limiters for every delayer, and in Kenya, where there are two limiters for every delayer, is this pattern reversed. Recent surveys in developing countries in Asia, the Near East and Latin America showed that limiters outnumber (often by far) delayers: Ratios of limiters to delayers in the 10 countries represented in the table ranged from 1.8 to 10.0.

Historically comparable data from demographic surveys were available for only four African countries (Botswana, Ghana, Kenya and Zimbabwe) at the time of this writing. In all four, the demand for limitation of births increased over time, and in three of the four, the ratio of limiters to delayers also increased. Only in Botswana, where both surveys found more limiters than delayers, did this ratio decline slightly. This evidence suggests that the rationale for individual demand may be changing.

The changing character of reproductive intentions—and the extent to which reproductive risk factors are associated with reproductive intentions—has important implications for family planning delivery and information systems. As we noted previously, many African governments support family planning primarily as a maternal and child health intervention. Indeed, the goal of many programs that promote childspacing is to reduce high levels of child and infant mortality. Certain characteristics of reproductive behavior are associated with higher risks of morbidity and mortality for women and children.[7] These higher risk characteristics, based primarily on bivariate studies, include high-parity births (generally more than four), births to younger (generally under 19) and to older (over 34) women and births less than two years apart.

The potential impact of changes in reproductive patterns on maternal and child survival is complex. Available research does not indicate how much of the association between these reproductive risk factors and mortality is actually causal. In addition, the potential impact of changes in reproductive patterns varies for individuals, families and populations. Despite these caveats, a reduction in the number of high-risk births would have a positive impact on maternal and child health throughout the developing world.[8]

For an analysis of potential changes in reproductive patterns associated with high-risk births, we used data from six surveys recently conducted in Africa under the DHS project: Botswana (1988), Burundi (1987), Liberia (1986), Mali (1987), Senegal (1986) and Zimbabwe (1988). The surveys employed standard stratified sampling techniques and survey instruments. The DHS selects a nationally representative sample, generally ranging between 3,000 and 10,000, from all women aged 15–49. We limit this analysis to

Table 1. Percentage of women aged 15–49 currently in union who were using a modern family planning method, percentage who expressed the intention to limit or delay births and ratio of intended limiters to intended delayers, by country and survey year

Country	Survey year	Using a modern method	Reproductive intention			Limit/delay ratio
			Delay*	Limit	Total	
Africa						
Benin	1981–1982 (WFS)	1	50	6	56	0.1
Botswana	1988 (DHS)	32	29	38	67	1.3
	1984 (CPS)	19	21	33	54	1.6
Burundi	1987 (DHS)	1	53	24	77	0.5
Côte d'Ivoire	1980–1981 (WFS)	0	35	4	39	0.1
Ghana	1988 (DHS)	5	45	23	68	0.5
	1979–1980 (WFS)	6	48	10	58	0.2
Kenya	1989 (DHS)	18	26	52	78	2.0
	1984† (CPS)	10	38‡	32	70	0.8
Liberia	1986 (DHS)	6	33	17	50	0.5
Mali	1987 (DHS)	1	32	17	49	0.5
Mauritania	1981 (WFS)	0	29	10	39	0.3
Nigeria (Ondo)	1986–1987 (DHS)	4	35	23	58	0.7
Nigeria	1981–1982 (WFS)	1	25	4	29	0.2
Senegal	1986 (DHS)	2	31	19	50	0.6
Senegal (rural)§	1982 (CPS)	0	71	7	78	0.1
Togo	1988 (DHS)	3	45	25	70	0.6
Uganda	1988 (DHS)	3	33	23	55	0.7
Zimbabwe	1988 (DHS)	36	35	33	68	0.9
	1984 (CPS)	27	33	25	58	0.8
Asia & Near East						
Indonesia	1987 (DHS)	44	27	51	78	1.9
Egypt	1988–1989 (DHS)	35	6	60	66	10.0
Sri Lanka	1987 (DHS)	41	18	65	83	3.6
Thailand	1987 (DHS)	64	17	66	83	3.9
Tunisia	1988 (DHS)	40	24	42	66	1.8
Latin America & Caribbean						
Brazil	1986 (DHS)	56	16	64	80	4.0
Colombia	1986 (DHS)	53	15	69	84	4.6
Ecuador	1987 (DHS)	36	19	50	69	2.6
Guatemala	1987 (DHS)	18	26	57	83	2.2
Mexico	1987 (DHS)	45	13	64	77	4.9

*Desire to delay next birth two years or more. †Refers to currently married fecund women 15–49.
‡Desire to delay one year or more. §Refers to currently married women 15–44.

Table 2. Percentage distribution of women aged 15–49 currently in union, by country, according to selected background characteristics

Characteristic	Botswana	Burundi	Liberia	Mali	Senegal	Zimbabwe
Education						
None	32.4	82.3	74.3	86.1	86.0	18.1
Primary	48.5	15.5	13.0	12.7	9.5	60.8
Secondary or higher	19.1	2.2	12.7	1.1	4.4	21.1
Residence						
Urban	31.5	3.3	37.4	25.3	32.5	29.6
Rural	68.5	96.7	62.6	74.7	67.5	70.4
Death of child						
0	79.2	57.4	53.0	44.9	51.6	73.3
≥1	21.0	42.6	47.0	55.1	48.4	26.7
Living sons						
0	20.4	22.7	32.1	30.9	28.1	20.9
≥1	79.6	77.3	67.9	69.1	71.9	79.1
Modern methods known*						
0	6.4	51.5	44.0	78.6	48.7	5.3
1–3	15.2	24.4	21.6	18.1	42.9	14.9
4–7	78.4	24.1	34.4	3.3	8.4	79.8
Total	100.0	100.0	100.0	100.0	100.0	100.0

*Includes unprompted and probed knowledge of method. Unprompted knowledge of one method is considered equivalent to probed knowledge of two methods. Knowledge of 1–3 methods requires, at minimum, unprompted knowledge of one method or probed knowledge of two methods.

Notes: In this table and tables 4 and 5, educational categories refer to some schooling at (but not necessarily completion of) that level. Some columns may not add to 100 because of rounding.

Sources: Demographic and Health Surveys for Botswana (1988), Burundi (1987), Liberia (1986), Mali (1987), Senegal (1986) and Zimbabwe (1988).

women who were in a legal or consensual union at the time of the survey.*

The selection of countries was dictated by the availability of DHS data at the time this study was first undertaken. However, these six countries are in many respects representative of the diversity to be found in Africa: Two are located in Sahel West Africa, one in Coastal West Africa, two in Southern Africa and one in Central Africa. Only East Africa is not represented. Two, Zimbabwe and Botswana, have rather advanced national family planning programs and high rates of contraceptive prevalence, three others have very new programs, and one (Mali) has none.

Table 2 summarizes data on selected background characteristics and reproductive experiences of women who participated in these surveys. In all the countries, fewer than one in four women had advanced beyond a primary education; in Burundi, Mali and Senegal, this proportion dropped to less than five percent, with more than 75 percent having no education. Well over half of the women—ranging from 97 percent in Burundi to 63 percent in Liberia—were living in rural areas. Child mortality is high: In Liberia, Senegal and Mali, 47 percent, 48 percent and 55 percent of women, respectively, had experienced the death of at least one child. However, because of high and early fertility, most women—ranging between 68 and 80 percent—had a living male child.

Knowledge of modern methods of contraception varied considerably across the countries surveyed and generally reflected the level of family planning program development. In Botswana and Zimbabwe, between five and seven percent knew no methods and nearly 80 percent knew (without prompting) more than four methods. In Burundi, Liberia and Senegal, where programs are at an earlier stage of development, roughly half of women knew no methods, and in Mali, where there is no national family planning effort, nearly 80 percent of women knew no methods.

Influence of Risks

We begin our analysis of these data by evaluating the association between reproductive risk and intention. Here we assign women to one of three reproductive intention categories: limiter, spacer and nonspacer.† The spacer differs from the delayer classification used in Table 1 in that a woman is described as wanting to space her next birth if the elapsed time since her last birth plus her intended waiting period (from date of interview to next birth) exceeded 24 months. This definition more closely corresponds to the birth interval associated with lower reproductive risk.

Our central question is a programmatic one: Are women who face greater risks associated with childbearing more or less likely to express reproductive intentions that would lead to risk-reducing behavior? We hypothesize that reproductive risk is an important correlate of reproductive intention; that women who are not at risk are more likely than women at risk to want their next birth soon; that women who are very young or have had a recent birth are more likely than those who are older or have not had a recent birth to want to space their next birth, and that women who are older or who are at high parity are more likely than those who are young or at low parity to want no more births.

The analysis presented here does not explore the reasons behind such an association. Earlier studies of fertility preferences using WFS data suggest that demographic factors rather than health risk factors are key in motivating reproductive preferences.[9] In particular, these studies found that the underlying factor in the desire to limit births was the achievement of the desired number of children rather than the increased health risks of high-parity births. However, such an in-depth analysis of DHS data has yet to be undertaken. Further research is required to better understand the relationship between reproductive risk and intentions and to examine the ways in which intentions translate into behavior.

The reproductive intentions of women according to category of reproductive risk are shown by country in Table 3. As the table demonstrates, the proportion of women who fell into one or more high-risk categories ranged between 74 and 82 percent. Between 54 and 59 percent of the women surveyed were older than 34, had had at least four children or were both older and at high parity.

There was a fair amount of association between risk category and intention. This was especially true among women who were subject to spacing risks—those who were very young, those who had had a recent birth and those who were exposed to both risks: More than 50 percent in each country expressed a desire to space their next birth. In Burundi, 88 percent of these women wished to wait at least two years until their next birth; in the other countries, however, the association was weaker, ranging from 70 percent in Zimbabwe to 52 percent in Senegal. Women aged 18 or

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*In the remainder of this article, "women" refers to all women in a consensual or legal union.

†For pregnant women, questions about reproductive intentions referred to their next pregnancy.

Table 3. Percentage of all women; and percentage distribution of women, by reproductive intentions; all according to country and reproductive risk factors

Country and risk factor	All women	Reproductive intention			
		Want birth in < 2 yrs.	Want birth in ≥ 2 yrs.	Want no more births	Total
BOTSWANA					
Total	**100.0**	**12.3**	**55.0**	**32.7**	**100.0**
No risk	25.6	18.5	67.3	14.2	100.0
High risk	74.4	10.1	50.8	39.0	100.0
Spacing risks	16.3	23.7	58.6	17.6	100.0
Age ≤18	0.9	86.7	6.7	6.7	100.0
Birth interval <15 mos.	14.8	19.8	61.9	18.3	100.0
Age ≤18 and birth interval <15 mos.	0.6	27.3	54.5	18.2	100.0
Limiting risks	58.1	6.3	48.6	45.0	100.0
Age 35–49	7.0	8.3	65.8	25.8	100.0
≥4 live births	22.2	8.4	51.1	40.5	100.0
Age 35–49 and ≥4 births	28.9	4.3	42.6	53.1	100.0
BURUNDI					
Total	**100.0**	**17.2**	**59.3**	**23.5**	**100.0**
No risk	18.4	45.2	48.1	6.7	100.0
High risk	81.6	10.9	61.8	27.3	100.0
Spacing risks	23.5	7.7	87.9	4.5	100.0
Age ≤18	0.4	100.0	0.0	0.0	100.0
Birth interval <15 mos.	22.8	5.8	89.6	4.6	100.0
Age ≤18 and birth interval <15 mos.	0.3	14.3	85.7	0.0	100.0
Limiting risks	58.1	12.2	51.2	36.6	100.0
Age 35–49	3.7	38.8	49.0	12.2	100.0
≥4 live births	24.8	9.7	66.8	23.6	100.0
Age 35–49 and ≥4 births	29.2	11.0	38.5	50.5	100.0
LIBERIA					
Total	**100.0**	**29.5**	**53.4**	**17.1**	**100.0**
No risk	19.4	34.7	61.9	3.4	100.0
High risk	80.6	28.3	51.3	20.4	100.0
Spacing risks	26.4	43.6	52.6	3.8	100.0
Age ≤18	4.1	84.1	15.9	0.0	100.0
Birth interval <15 mos.	18.8	34.9	60.2	4.8	100.0
Age ≤18 and birth interval <15 mos.	3.5	42.7	54.8	2.4	100.0
Limiting risks	54.3	20.9	50.6	28.5	100.0
Age 35–49	8.0	26.2	63.5	10.3	100.0
≥4 live births	22.9	24.8	53.7	21.6	100.0
Age 35–49 and ≥4 births	23.4	15.4	43.2	41.5	100.0
MALI					
Total	**100.0**	**21.5**	**62.2**	**16.2**	**100.0**
No risk	18.0	27.2	70.2	2.6	100.0
High risk	82.0	20.3	60.5	19.2	100.0
Spacing risks	23.4	40.3	56.3	3.4	100.0
Age ≤18	5.9	74.6	23.2	2.3	100.0
Birth interval <15 mos.	13.7	28.4	67.0	4.6	100.0
Age ≤18 and birth interval <15 mos.	3.8	30.4	68.7	0.9	100.0
Limiting risks	58.6	12.3	62.2	25.5	100.0
Age 35–49	5.8	15.5	58.0	26.4	100.0
≥4 live births	25.3	15.1	73.6	11.3	100.0
Age 35–49 and ≥4 births	27.5	9.0	52.7	38.4	100.0
SENEGAL					
Total	**100.0**	**43.8**	**37.2**	**18.9**	**100.0**
No risk	18.6	69.0	29.0	2.1	100.0
High risk	81.4	38.1	39.1	22.8	100.0
Spacing risks	26.7	45.5	51.8	2.7	100.0
Age ≤18	5.6	92.0	7.0	1.1	100.0
Birth interval <15 mos.	17.2	31.8	64.8	3.5	100.0
Age ≤18 and birth interval <15 mos.	4.0	39.8	58.6	1.5	100.0
Limiting risks	54.7	34.5	32.8	32.7	100.0
Age 35–49	4.0	69.1	11.8	19.1	100.0
≥4 live births	25.8	35.4	47.1	17.5	100.0
Age 35–49 and ≥4 births	24.9	28.0	21.4	50.7	100.0
ZIMBABWE					
Total	**100.0**	**11.7**	**55.6**	**32.8**	**100.0**
No risk	19.5	19.4	70.3	10.3	100.0
High risk	80.5	9.8	52.0	38.2	100.0
Spacing risks	23.5	20.3	69.6	10.1	100.0
Age ≤18	2.5	82.1	13.4	4.5	100.0
Birth interval <15 mos.	19.1	12.1	76.0	11.9	100.0
Age ≤18 and birth interval <15 mos.	1.9	20.0	80.0	0.0	100.0
Limiting risks	56.9	5.5	44.7	49.8	100.0
Age 35–49	5.0	9.1	56.8	34.1	100.0
≥4 live births	23.3	6.5	57.2	36.3	100.0
Age 35–49 and ≥4 births	28.6	4.1	32.4	63.5	100.0

Note: Totals may not add to 100 because of rounding.

Sources: Data are from Demographic and Health Surveys for Botswana (1988), Burundi (1987), Liberia (1986), Mali (1987), Senegal (1986) and Zimbabwe (1988).

younger who had not had a recent birth were most likely to diverge from this pattern, with between 75 and 100 percent wanting a birth soon.

There was less association between risk category and intention among women subject to limiting risks—those who were older than 34, those who were at high parity and those who were both older and at high parity. Overall, the proportion of these women wanting to limit their childbearing ranged from 26 percent in Mali to 50 percent in Zimbabwe. The intention to limit was highest among women who were both older and at high parity, ranging from 38 percent in Mali to 64 percent in Zimbabwe.

Among women who fell into none of these risk categories, the desire to have a birth soon varied from 19 percent in Zimbabwe and Botswana to 69 percent in Senegal. Most women in this group, except those in Senegal, intended to delay their next birth for two or more years.

It appears from the foregoing analysis that women's reproductive intentions are indeed influenced by age, parity and the interval since their last birth. We use a two-stage analysis to assess how these risk factors, in combination with other factors, influence intentions. The first step assesses the determinants of the intention to limit births. The second focuses on the intention to space the next birth (i.e., the desired waiting period from the date of the interview until the next birth).

The "limiting model" uses logistic regression analysis to evaluate the relationship between a set of dichotomous and continuous independent variables and a dichotomous dependent response variable--desire to limit vs. no desire to limit. The "spacing model" uses linear regression to examine the determinants of the intended waiting period until the next birth. In both models, the independent variables fall into four categories: reproductive risk, other aspects of reproductive experience, socioeconomic status and family planning program exposure.

- *Reproductive risk.* Each model includes two variables in this category. The limiting model focuses on older age (35–49) and high parity (four or more births).[10] Age is included as a covariate because it allows us to exploit the incremental nature of the age-associated risks of childbearing.* In addition, a dichotomous parity variable indicates whether a woman has had four or more births.

The reproductive risk factors included in the spacing model are younger age (18 or under) and short birth interval (less than 24 months).[11] Age is included as a continuous variable and birth interval as a dichotomous variable.

- *Other aspects of reproductive experience.* A woman's reproductive intentions are influenced by aspects of her own reproductive experience and by the cultural norms associated with them. Two variables are selected to measure pertinent aspects of this experience—whether the woman has experienced the death of a child and whether she has a living son.

A woman who has experienced the death of an infant or child may be less likely to want to limit her births. In societies with relatively low rates of infant and child mortality, however, infant or child death may be a less important factor in shaping a woman's reproductive intentions. All the spacing models and four of the limiting models (those for Burundi, Liberia, Mali and Senegal) include a dichotomous variable indicating whether a woman has experienced the death of at least one child. In countries for which the variable did not improve the limiting model (Botswana and Zimbabwe, countries with relatively low infant and child mortality rates), it was omitted.

The importance Africans place on having a son should not be underestimated.[12] Although the effect of having a living male child on a woman's decision to space her next birth is unclear, not having a male child may make her more eager to have another child soon. This variable is included in all the spacing models and two of the limiting models (those for Botswana and Zimbabwe). It was omitted from the limiting models for those countries in which the death of a child significantly improved the model, making the effect of having a living male child not significant.

- *Socioeconomic status.* Women of higher socioeconomic status tend to have better access to health care and thus are likely to have greater awareness of the health consequences associated with reproductive risk factors. Further, the demand for child quality over quantity is closely linked to socioeconomic status.[13] We chose a single variable—education—to measure socioeconomic status.

Although a consensus has not been reached on the mechanism by which education affects fertility, there is general agreement that increased education tends to reduce fertility.[14] In this analysis, education is expected to be positively associated with the desire to limit or space births. In countries where the level of women's education is very low, we simply distinguish between having no education and having some level of education. In more developed countries (Botswana and Zimbabwe), we define three levels of education: none, some primary and at least some secondary.

The effect of residence on reproductive intentions appears to be less direct than that of education. Regression equations that used urban-rural residence as a proxy for socioeconomic status were found to fit the data poorly. Including both urban-rural residence and education in the model further diminished the effect of the residence variable.

- *Family planning program exposure.* Exposure to a family planning program is expected to influence reproductive intentions by increasing awareness of the health consequences associated with reproductive risk factors and by informing women of the family planning options available to help them realize their reproductive intentions.

Knowledge of modern family planning is used as a proxy for the impact of services on reproductive behavior. This measure is not a perfect proxy, because it may reflect in part the motivation of women to seek out information on family planning. Still, this measure has been found to be quite sensitive to the accessibility and quality of family planning services.[15] In countries with low levels of awareness (Burundi, Liberia, Mali and Senegal), we identify women who were able to spontaneously recognize at least one modern method (or after probing, two methods). However, in the spacing models for countries with higher levels of awareness (Botswana and Zimbabwe), we identify women who spontaneously knew of two or more methods (or four or more methods after probing).

The Limiting Model

Regression results for the limiting model are presented in Table 4. The same core model is fitted to all six countries, although minor modifications are made to account for country-specific factors. For example, for Botswana and Zimbabwe, where women's education levels are relatively high, we control for both primary and secondary levels of education.

Because of sparse cell distribution as the number of factors in the model increased, we attempted to develop a parsimonious model. Even with a five-factor model, we encountered empty cells in most cases. When this occurred, we corrected for the potential instability of the estimates by adding a very small value to all the cells.

The model fits Botswana and Burundi well and fits Zimbabwe and Liberia fairly well. Therefore, our initial discussion of results will be restricted to those four countries.

Although not all the coefficients were significant, each variable did lead to a statistically significant improvement in the fit of the model. As expected, parity was the most important determinant of desire to limit births in these four countries. In Botswana and Burundi, women who had had at least four live births were more likely (by 43 percent and 79 percent, respectively) than women who had fewer children to want to limit births. In Liberia and Zimbabwe, high-parity women were 68 percent and 66 percent more likely than lower parity women to want to limit births.

Age is a less important factor. However, the overall fit of the model was improved for three of the four cases when it was introduced as a continuous variable. Liberia was the only country for which the model's fit was not improved by this adjustment. Here, women who were 35–49 were 36 percent more likely than younger women to want to limit births. In Liberia, women who were both older and at high parity were 128 percent more likely to want to limit births than women who were exposed to neither of these risks.

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*The limiting models for Liberia and Senegal use a dichotomous variable for age rather than the age covariate, because in those two cases, the dichotomous variable improved the fit of the model.

Although age and parity had the greatest influence on desire to limit, other aspects of reproductive experience were also important in most cases. Having a male child was particularly important in the two lower fertility countries of Botswana and Zimbabwe. Women with living sons in these countries were more likely (by 20 percent and 29 percent, respectively) to want to limit births. This effect was enhanced when combined with a reproductive risk factor. For example, women who were at high parity and who had a living male child were 73 percent (Botswana) and 114 percent (Zimbabwe) more likely to want to limit births. The death of a child had a negative effect on desire to limit births, but was significant only in the case of Liberia, where women who had had such an experience were 10 percent less likely to want to limit births.

Education was a significant factor in each of these four countries. In Burundi and Liberia, where we evaluated only the effect of having some schooling, educated women were 10 percent and 13 percent more likely to want to limit births. In Botswana and Zimbabwe, education also had positive effects on desires for limitation. Here, we distinguished between the effects of primary and secondary education. In Botswana, secondary education had the greater and only significant effect; women with at least some secondary schooling were 10 percent more likely to want to limit births. In Zimbabwe, primary education had the greater effect; women with some primary schooling were 21 percent more likely to want to limit, compared with women with at least some secondary schooling, who were nine percent more likely to want to limit births.

Awareness of family planning had a positive effect in each country. In Botswana and Zimbabwe, where we distinguished between high and low levels of awareness, women who were more aware were 12 and nine percent more likely to want to limit than those who were unaware. In Burundi and Liberia, where a distinction was made between some and no awareness, women who were aware were 12 percent and 21 percent more likely to want to limit. Again, the combined effect of knowledge about family planning with reproductive risk was large. In Liberia, high-parity women who had some awareness of family planning were 103 percent more likely to want to limit than women who fell into neither of these categories. High-parity women who were both aware of family planning and older were 176 percent more likely to want to limit than those who were unaware and faced neither of these reproductive risks.

The same five-factor limiting model fit Senegal less well and fit Mali poorly. Despite the poorer fit, however, the coefficients in these two models had the same sign and were of similar magnitude to those of the better fitting models. Although the factors increased the explanatory power of the model, its overall explanatory power was very small.

We were able to improve the fit in Senegal only slightly by introducing a factor that distinguished between urban and rural residence. We attempted to improve the fit of the model for Mali by including a variable that would help determine whether males are crucial to reproductive decision-making; we included whether or not the respondent and her husband had discussed family planning in the past year, but little improvement resulted. Although men appear to play a dominant role in fertility decisions in Mali,[16] we were unable to capture this effect in our model. The poor overall fit in Mali may reflect, in part, the limited variation in a number of variables. The Mali sample had the lowest proportion of women wanting to limit births (16 percent), the lowest proportion having any education (14 percent) and the lowest proportion knowing at least one method of family planning (21 percent).

Attempts to include higher level interactions in the model for all six countries were generally not fruitful. Adding the interaction of age and parity sharply increased the number of empty cells and led to low P-values for the likelihood ratio and large standard errors for some of the coefficients. The interaction of education and knowledge of a modern method of family planning caused the P-value to drop when it was added to the core five-factor model.

The Spacing Model

We next assess the determinants of the length of time that a woman desires to wait before having her next child. We consider here only women who want more children. Initial attempts to combine limiters with spacers led to unsatisfactory results, suggesting that the two intentions, to space and to limit, have different motivations.

The model does not fit the data for any of the six countries particularly well, judging from the proportion of variance explained by the dependent variable. This suggests that the factors we have included here are only a few of the influences determining the length of time a woman wishes to wait before her next birth. The model fits the data best for Zimbabwe and Botswana (R^2=0.194 and 0.169, respectively) and fits the data for Liberia to a lesser degree (R^2=0.102). For the remaining three countries—Burundi, Mali and Senegal—the model has virtually no explanatory power (R^2=0.016, 0.032 and 0.052, respectively).

Table 4. Results of logit regression analysis of desire to limit births among women currently in union, by country and variables

Country and variable	Coefficient	Standard error
Botswana (N=1,600)		
Intercept	0.63	0.11*
Parity ≥4	0.36	0.03*
Age, covariate	0.06	0.04
Son alive	0.19	0.05*
Primary educ.	0.02	0.05
Secondary educ.	0.10	0.04*
Know a method	0.12	0.07
Burundi (N=2,669)		
Intercept	0.87	0.10
Parity ≥4	0.58	0.04*
Age, covariate	0.06	0.04
Child died	–0.02	0.03
Some educ.	0.10	0.33*
Know a method	0.11	0.03*
Liberia (N=3,538)		
Intercept	0.88	0.36*
Parity ≥4	0.52	0.03*
Age 35–49	0.31	0.03*
Child died	–0.10	0.03*
Some educ.	0.12	0.03*
Know a method	0.19	0.03*
Mali (N=3,005		
Intercept	1.05	0.12*
Parity ≥4	0.48	0.46*
Age, covariate	0.02	0.03
Child died	–0.06	0.03*
Some educ.	0.03	0.04
Know a method	0.02	0.04
Senegal (N=3,362)		
Intercept	0.78	0.05*
Parity ≥4	0.54	0.04*
Age 35–49	0.45	0.03*
Child died	–0.12	0.03*
Some educ.	0.12	0.05*
Know a method	0.10	0.03*
Zimbabwe (N=2,583)		
Intercept	0.73	0.09*
Parity ≥4	0.51	0.03*
Age, covariate	0.03	0.03
Son alive	0.26	0.04*
Primary educ.	0.19	0.05*
Secondary educ.	0.09	0.03*
Know a method	0.09	0.03*

*$p<0.05$.

Note: Botswana: P=0.63, Likelihood Ratio=14.5, Degrees of Freedom=17; Burundi: P=0.61, Likelihood Ratio=8.2, Degrees of Freedom=10; Liberia: P=0.31, Likelihood Ratio = 29.1, Degrees of Freedom=26; Mali: P=0.00, Likelihood Ratio=28.6, Degrees of Freedom=10; Senegal: P=0.09, Likelihood Ratio=36.0, Degrees of Freedom=26; Zimbabwe: P=0.35, Likelihood Ratio=18.7, Degrees of Freedom=17.

For Zimbabwe and Botswana, both

Table 5. Results of regression analysis of desire to space births among women currently in union, by country and variables

Country and variable	Coefficient	t
Botswana (N=1,044†)		
Intercept	22.29	4.63*
Age, covariate	–0.83	–6.50*
Interval <2 yrs.	13.11	7.59*
Child died	–1.11	0.50
Son alive	9.25	4.86*
Primary educ.	7.55	3.94*
Secondary educ.	8.03	3.36*
Know ≥4 methods	10.82	3.53*
Burundi (N=1,685†)		
Intercept	34.44	7.91*
Age, covariate	–0.21	–1.38
Interval <2 yrs	5.77	3.23*
Child died	–3.75	–2.04*
Son alive	1.87	0.92
Some educ.	1.16	0.54
Know ≥2 methods	3.24	1.96*
Liberia (N=2,678†)		
Intercept	14.32	10.16*
Age, covariate	–0.15	–3.16*
Interval <2 yrs.	5.40	7.91*
Child died	–1.06	–1.54
Son alive	4.65	6.53*
Some educ.	5.81	7.39*
Know ≥2 methods	3.02	4.51*
Mali (N=2,207†)		
Intercept	–26.84	7.56*
Age, covariate	–.55	0.12
Interval <2 yrs	7.54	1.80*
Child died	2.06	1.13
Son alive	1.90	1.96
Some educ.	7.24	2.63*
Know ≥2 methods	2.88	1.34
Senegal (N=1,432†)		
Intercept	29.64	20.73*
Age, covariate	–.30	–5.67*
Interval <2 yrs.	0.59	0.87
Child died	0.09	0.13
Son alive	0.92	1.19
Some educ.	3.32	3.71*
Know ≥2 methods	1.83	2.73*
Zimbabwe (N=1,696†)		
Intercept	22.53	7.66*
Age, covariate	–0.58	–6.74*
Interval <2 yrs.	13.40	12.29*
Child died	–4.34	–3.28*
Son alive	6.57	5.21*
Primary educ.	1.76	1.18
Secondary educ.	6.80	3.66*
Know ≥4 methods	7.09	5.34*

*$p<0.05$.

†Sample excludes women who desire to limit births and women who report themselves as infecund.

Note: Botswana: $R^2=0.169$, $F=30.19$*; Burundi: $R^2=0.016$, $F=4.63$*; Liberia: $R^2=0.102$, $F=50.44$*; Mali: $R^2=0.032$, $F=12.30$; Senegal: $R^2=0.052$, $F=12.94$; Zimbabwe: $R^2=0.194$, $F=58.18$*.

younger age and short birth interval were statistically significant, as Table 5 shows. Women who had had a recent live birth wanted to delay their next birth 13 months longer than women who had not. Age, on the other hand, had a slight negative effect on desired waiting time. In Botswana and Zimbabwe, the desired waiting period dropped by a little less than one month for each year of age.

Other aspects of a woman's reproductive experience also influenced her reproductive intentions. In Zimbabwe and Botswana, women who had a living male child wanted to wait longer before having their next birth (by seven months and nine months, respectively) than those who did not. In Zimbabwe, the death of a child had a negative effect on the waiting period: Women who had experienced an infant or child death wanted to wait four months less than those who had not.

Education also had a significant effect on the desired waiting time. In Zimbabwe, women with some secondary or more education wanted to delay their next birth nearly seven months longer than did those with less education. Having some primary education, however, did not significantly affect desired waiting time. In Botswana, primary and secondary education were both significant and had the same effect; in each case, women wanted to delay their next birth eight months longer than did those with no education.

Family planning awareness had a significant positive effect on desired waiting period. The effect was greatest in Botswana, where women who knew two or more methods unprompted and four or more with prompting wanted to delay their next birth 11 months longer than those who did not. In Zimbabwe, women with this level of awareness wanted to wait seven months longer than those who knew fewer than two methods.

Discussion

The findings presented in this paper have important general implications for policies and programs in these countries and, potentially, for other countries in Africa. First, the expressed reproductive intention to either limit or space births was quite common in these six countries. In Senegal, 56 percent of women expressed such an intention, while among the remaining five countries this proportion ranged from 71 to 88 percent. The large majority of these women expressed the desire to space. Even so, the proportions expressing a desire to limit were not insignificant, ranging from 16 percent in Mali to 33 percent in Botswana and Zimbabwe. For these women, longer-lasting methods of family planning would be appropriate.

From a programmatic perspective, our results suggest that women who are older, more educated and at high parity are most likely to express the desire to limit births. As noted earlier, this probably reflects that older, higher parity women have achieved their desired number of children. Additional research is required to determine the extent to which health considerations affect the desire to limit childbearing. In particular, the apparent poor correspondence between reproductive risk and intention in Mali and Senegal warrants further study.

The intention to space was more common than the intention to limit births in all countries considered here, ranging from 37 percent in Senegal to 62 percent in Mali. This would indicate that temporary methods of family planning are appropriate for meeting most demand in Africa. Many programs in Africa already attempt to reach these women through antenatal and child-care clinics. In the short term, these programs may become even more important as traditional practices of postpartum abstinence and breastfeeding decline in prevalence.

Among the variables that influenced intentions to delay the next birth, reproductive risk factors appeared to be the most important. In particular, women who had had a recent birth wanted to delay their next birth longer than those who had not. Among those who had had a recent birth, younger women tended to be more likely than older women to want to delay longer. Given this pattern and given that birthspacing provides important health benefits for children, young women should be an important target group for family planning services and information. The association between risk and intentions was particularly strong in Botswana and Zimbabwe, both of which have established programs that emphasize birthspacing. Further research is required to determine the extent to which, as well as the mechanisms by which, programs promoting birthspacing influence reproductive intentions. A consistently important factor was awareness of family planning methods. In Botswana, women with high awareness wanted to delay nearly a year longer than did women who were less aware. The effect of awareness was even greater than that of education in both Botswana and Zimbabwe.

The remaining background factors, although less important, tended to affect intentions to delay the next birth in expected patterns. For example, longer waiting periods were desired by women with higher levels of education, those who had not experienced a child's death and those who had a living male child. We are unable to explain very well the variation in intention to space in Burundi, Mali and Senegal. Delayers in those countries appeared to be a very heterogeneous group.

The analysis presented here has focused exclusively on reproductive intentions. Certainly, a fuller analysis is required to determine the extent to which these intentions are realized through reproductive behavior. The generally low levels of contraceptive prevalence revealed in the DHS data suggest that a majority of women in these countries take no effective measures to realize their intentions. Discovering the reasons for use and nonuse clearly warrants additional analysis.

References

1. J. Caldwell and P. Caldwell, "Is the Asian Family Planning Model Suited to Africa?" *Studies in Family Planning*, **19**:19, 1988.

2. E. Maguire and V. Poole, "The Evolution of AID and Other Donor Assistance in Population Policy," paper presented at the United Nations (UN)/International Union for the Scientific Study of Population (IUSSP) Expert Group Meeting on the International Transmission of Population Policy Experience, Saly Portudal, Senegal, Nov. 3-4, 1988.

3. UN Population Division, "Global Population Policy Database," New York, 1987.

4. Department of International Economic and Social Affairs, UN, "Levels and Trends of Contraceptive Use as Assessed in 1988," *Population Studies*, No. 110, New York, 1989.

5. J. Bongaarts, O. Frank and R. Lesthaeghe, "The Proximate Determinants of Fertility in Sub-Saharan Africa," *Population and Development Review*, **10**:511, 1984; M. Cain, "Patriarchal Structure and Demographic Change," proceedings of the Conference on Women's Position and Demographic Change, IUSSP, Oslo, 1988; J. Caldwell and P. Caldwell, "The Cultural Context of High Fertility in Sub-Saharan Africa," *Population and Development Review*, **13**:409, 1987; J. Caldwell and P. Caldwell, New Orleans, April 21-23, 1988, op. cit. (see reference 1); F. Coeytaux, "Low Contraceptive Prevalence in Sub-Saharan Africa: A Reflection of Low Demand or Poor Supply?" paper presented at the annual meeting of the Population Association of America, New Orleans, Apr. 21-23, 1988; O. Frank, "The Demand for Fertility Control in Sub-Saharan Africa," *Studies in Family Planning*, **18**:181, 1987; T. Locoh, "The Evolution of the Family in Africa," in E. van de Walle et al., eds., *The State of African Demography*, IUSSP, 1988; and F. van de Walle and B. Traore, "Attitudes of Men and Women Toward Contraception in Bobo-Dioulasso," *African Demography Working Paper*, [illegible], Population Studies Center, University of Pennsylvania, Philadelphia, 1986.

6. J. Bertrand et al., "Strategies for Family Planning Service Delivery in Bas Zaire," *International Family Planning Perspectives*, **12**:108, 1986; J. Bertrand et al., "Attitudes Towards Voluntary Surgical Contraception in Four Districts of Kenya," *Studies in Family Planning*, **20**:281, 1989; and D. Lauro, *Final Report: Community Based Distribution Family Health Services*, Columbia University/University of Khartoum Joint Operations Research Project, New York City, 1988.

7. Committee on Population, National Research Council, *Contraception and Reproduction: Health Consequences for Women and Children in the Developing World*, National Academy Press, Washington, D.C., 1989; S. Rutstein, "Infant and Child Mortality: Levels, Trends and Demographic Differentials," revised edition, *WFS Comparative Studies*, No. 43, International Statistical Institute, Voorburg, the Netherlands, 1984; J. Trussell and A. Pebley, "The Potential Impact of Changes in Fertility on Infant, Child, and Maternal Mortality," *Studies in Family Planning*, **15**:267, 1984.

8. Committee on Population, 1989, op. cit. (see reference 7).

9. R. E. Lightbourne, "Desired Number of Births and Prospects for Fertility Decline in 40 Countries," *International Family Planning Perspectives*, **11**:34, 1985.

10. Committee on Population, 1989, op.cit. (see reference 7).

11. Ibid.

12. K. O. Mason and M. T. Anju, "Differences Between Women's and Men's Reproductive Goals in Developing Countries," *Population and Development Review*, **13**:611, 1987.

13. T. Paul Schultz, *Economics of Population*, Addison-Wesley, Reading, Mass., 1981.

14. S. Cochrane, *Fertility and Education: What Do We Really Know?* The World Bank, Washington, D.C., 1979; and G. Rodriguez and J. Cleland, "The Effects of Parental Education on Marital Fertility," *Population Studies*, **42**:241, 1988.

15. R. Avery, "Family Planning Services and Contraceptive Behavior in the Dominican Republic," unpublished paper, 1988.

16. F. van de Walle and B. Traore, 1986, op. cit. (see reference 5).

Resumen

Un análisis de datos de la Encuesta Demográfica y de Salud (EDS) de seis países del Africa subsahariano descubrió que los factores de riesgo reproductivo (edad, paridad e intervalo desde el último nacimiento) estaban altamente ligados el deseo de las mujeres de limitar los nacimientos. Entre las mujeres que habían tenido cuatro o más nacidos vivos, la probabilidad de formular el deseo de no tener más hijos era hasta 79 por ciento más alta que entre las mujeres de baja paridad. También era más probable que desearan limitar los nacimientos las mujeres con educación, de 35 años y más, las que estaban informadas sobre métodos de planificación familiar y las que tenían un hijo varón vivo.

En Zimbabwe y Botswana, una cantidad de factores también estaban asociados con el deseo [illegible] postergar el próximo nacimiento. Las mujeres que habían tenido un hijo en los dos años anteriores a la encuesta deseaban postergar su próximo nacimiento unos 13 meses más que las que no habían alumbrado recientemente, y las mujeres que tenían un hijo varón vivo deseaban esperar un tiempo más prolongado que las que no tenían un varón vivo (de siete y nueve meses, respectivamente). En Zimbabwe, las mujeres con educación secundaria o superior deseaban postergar su próximo nacimiento cerca de siete meses más que las con menos educación, y en Botswana, las mujeres con educación primaria o superior deseaban esperar ocho meses más que las mujeres sin educación. Las mujeres que tenían un conocimiento espontáneo de por lo menos dos métodos de planificación familiar deseaban esperar siete meses (en Zimbabwe), y 11 meses (en Botswana) más que las que conocían un solo método o ninguno.

Résumé

Une analyse des données de l'Enquête démographique et de santé effectuée dans six pays d'Afrique subsaharienne a révélé que les facteurs de risque de reproduction (âge, parité et intervalle depuis la dernière naissance) étaient en étroite corrélation avec les intentions de la femme de limiter les naissances. Les femmes ayant eu au moins quatre naissances vivantes étaient plus susceptibles, dans une proportion allant jusqu'à 79 pour cent, que les femmes avec parité inférieure d'exprimer le désir de ne plus avoir d'enfants. Les femmes instruites, celles âgées de 35 ans et plus, celles sensibilisées dans une certaine mesure aux méthodes de planification familiale et celles qui avaient un enfant mâle vivant étaient aussi plus susceptibles de vouloir limiter leurs naissances.

Au Zimbabwé et au Botswana, un certain nombre de facteurs étaient aussi associés au désir de retarder la prochaine naissance. Les femmes qui avaient eu un enfant au cours des deux années précédant l'étude voulaient retarder leur prochaine naissance de 13 mois de plus que les femmes qui n'avaient pas donné naissance récemment; et les femmes qui avaient un enfant mâle vivant voulaient attendre plus longtemps (sept et neuf mois de plus, respectivement) que celles sans enfant mâle vivant. Au Zimbabwé, les femmes ayant au moins un niveau d'instruction secondaire voulaient retarder leur prochaine naissance de près de sept mois de plus que les femmes moins instruites; et, au Botswana, les femmes ayant au moins un niveau d'instruction primaire voulaient attendre huit mois de plus que les femmes non instruites. Les femmes qui connaissaient au moins deux méthodes de planification familiale, sans qu'on ne leur suggère les méthodes, voulaient attendre sept mois (Zimbabwé) et 11 mois (Botswana) de plus que les femmes qui connaissaient moins de deux méthodes.

Special Report

Adolescent Fertility in Latin America and the Caribbean: Examining the Problem and the Solutions

By Lisa Remez

Early childbearing has long been a standard feature of Latin American and Caribbean societies. But contemporary socioeconomic and demographic conditions have conspired to make what was once simply a traditional life-event into one with far-reaching adverse effects on the adolescent mother, her child and society as a whole. Consequently, throughout the past decade, numerous programs have tried a variety of approaches to prevent adolescent childbearing, and failing that, to minimize the damage it can cause. In addition, surveys from a number of countries now exist that provide data on the magnitude of the problem and examine the determinants of teenage childbearing and its short-term and long-term social and financial costs.

For one week, 148 professionals involved with adolescents in 29 countries*—and a group of adolescents themselves—stopped to look back over a decade of research and programs and to evaluate their collective experience with an eye toward planning for the future. The International Conference on Adolescent Fertility in Latin America and the Caribbean, held November 6–10, 1989, in Oaxaca, Mexico, was jointly sponsored by The Population Council and The Pathfinder Fund, with assistance from the United Nations Population Fund (UNFPA), the Pan American Health Organization (PAHO) and the William and Flora Hewlett Foundation. By assembling the principal players from a wide variety of disciplines and backgrounds—including adolescents, researchers, program directors, sex educators, family planning providers, health care providers, government officials and representatives from international agencies—the organizers hoped to establish a set of regional priorities for the 1990s.

According to Bonnie Shepard of The Pathfinder Fund, the conference was originally conceived to provide researchers and program managers, who rarely coordinate their efforts, with the opportunity to do so.[1] Kathryn Tolbert of The Population Council, Mexico, said that she and the other organizers realized that the region had already produced a large amount of documentation in the area of adolescent fertility. Thus, "there was no need for a *teaching* conference, but rather for a *sharing* conference which would help the participants evaluate their work and their country's progress in the context of the state of the art in the region."[2] Since the first regional conference on adolescent pregnancy and reproductive health held four years earlier in Oaxtepec, Mexico,[3] awareness of adolescent fertility and its attendant problems has increased substantially. The Oaxaca organizers felt that enough data had finally been collected to warrant an examination of future research and programs in terms of priorities, especially in light of the ever-increasing numbers of adolescents and the very limited resources available to educate and provide care for them.

Describing the Problem

During the opening ceremony, Carlos Serrano, the regional adviser for PAHO, established the wide-reaching societal context of adolescent pregnancy and childbearing. He referred to the phenomenon as "transcending the physical and psychosocial health of individuals of a single generation to become a strong indicator of social development" having repercussions throughout the evolution of several generations.[4] Early sexual initiation and childbearing cannot be considered as isolated events; instead, they reflect generalized problems such as those stemming from negative attitudes toward female sexuality, inadequate sexual education and a lack of alternative roles and opportunities for women, according to the background paper prepared by Lucille Atkin of the Mexican National Institute for Perinatology.[5]

In his opening address, George Zeidenstein, president of The Population Council, stressed the direct relationship between the low status of women and too-early pregnancy and childbearing. Zeidenstein asserted that no lasting solutions to the problem will be found "unless we recognize the discrimination faced by women in this region and in all parts of the world," since many "modern" patriarchal societies still endorse a woman's reproductive role at the expense of her productive roles.[6] Benjamin Viel, president of the Chilean Family Planning Association, presented the sobering reality that at its current pace of growth, the Latin American population will double in roughly 20 years. Thus, the Latin American nations will also need to double the present level of food production and number of spaces in employment, education, housing and health care to *maintain* the current level of misery. Of course, in the event that this doubling of life-sustaining resources does not succeed, the level of misery will increase accordingly.[7]

Throughout the week, various adults and adolescents active in the family planning field offered their views of the progress achieved—and the disappointments experienced—by research and program efforts in adolescent fertility, sex education, family planning and reproductive health services. Leo Morris, of the U.S.

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*__Caribbean__—Antigua, Barbados, Guyana, Haiti, Jamaica, St. Lucia and St. Vincent and the Grenadines; **Latin America**—Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Suriname, Uruguay and Venezuela; **Other**—the United States and Switzerland.

Centers for Disease Control (CDC), interpreted some of the most recent findings of the Young Adult Surveys that have been carried out in seven Latin American cities and in Jamaica.[8] In all the surveys, household samples of 15–24-year-old men and women were interviewed. In addition to data on sexual activity, fertility and contraceptive knowledge and use, the surveys supply information on reactions to sex education courses and their content. After expressing gratification with the consistency of the results, Morris brought up what many other researchers would also mention during the conference—that adolescent sexual activity is sporadic and unplanned (especially the first experience), a finding that directly affects the design and delivery of contraceptive services targeted to teens.

The Young Adult Surveys reveal that significant proportions of adolescent women in union conceived their first child premaritally—in South America, this proportion ranges from a low of 25 percent in Guayaquil, Ecuador, to 63 percent in Santiago, Chile.[9] These data support the common perception that many adolescents marry to legitimate a birth. The data refer only to births, however. The number of premarital pregnancies would undoubtedly be higher if those terminated by illegal abortions were also counted. (One estimate published in 1985 and derived from various fertility surveys suggests that the rate of abortion in Latin America ranges from 30 to 60 per 1,000 women younger than 19 years of age.[10])

Morris presented age-specific fertility rates based either on recent national surveys or on the latest available data (Table 1). These range from a high of 152 live births among 1,000 women aged 15–19 in Grenada to 59 per 1,000 in Chile. According to Morris, declines in the fertility rate among this age-group have occurred in a number of countries, although no trend data were presented. Morris said that rising age at marriage in the region is responsible for these present declines (as opposed to changes in sexual activity or contraceptive use) and could result in still further ones. But even if the teenage birthrate is declining, the number of births to teenagers will continue to rise as the number of women in this age-group continues to grow.

Recent trend data on adolescent fertility rates in three South American nations—Brazil, Colombia and Peru—present a somewhat mixed picture. In Colombia, for example, the age-specific fertility rate has been declining steadily. The rate went from 118 births per 1,000 15–19-year-old women in the late 1960s to 96 per 1,000 in the mid-1970s, and to 78 per 1,000 in the 1981–1986 period.[11] The situation in Peru, however, has been fairly stable, mostly because the rapid rise in adolescent fertility rates in rural areas (from 115 per 1,000 in the mid-1970s to 137 per 1,000 for the 1981–1986 period) all but cancelled out a decline in urban areas. Thus, the overall rate has stayed virtually the same—at 84 per 1,000—over the past two decades.[12] In Brazil, the most populous nation in Latin America, fertility rates among adolescents in both urban and rural areas have been rising, so the national rates have increased, from 75 per 1,000 in 1970 to 81 per 1,000 in the 1981–1986 period.[13] (A comparative profile of adolescents in these three countries, with some additional analysis for the entire region, is currently under way.[14])

As AIDS becomes more of a concern throughout Latin America and the Caribbean, it is imperative that adolescents potentially at risk of contracting the human immunodeficiency virus (HIV) be adequately informed of the danger. Five of the Young Adult Surveys measured AIDS knowledge. According to Morris, the responses from young adults in five South American cities (Salvador and São Paulo, Brazil; Quito and Guayaquil, Ecuador; and Santiago, Chile) indicate that the level of AIDS knowledge is very high—over 90 percent of respondents knew the three principal modes of transmission.[15] Nevertheless, a substantial amount of misinformation persists, with 31–63 percent of respondents affirming that the HIV virus can be spread by mosquitoes, by sharing utensils or by using an infected person's bathroom. These young adults (along with their peers in the United States[16] and probably elsewhere) appear to share the "adolescent syndrome": They acknowledge that others are at risk but do not believe themselves to be. For example, in the two Brazilian cities, just four percent of sexually active unmarried women and 10 percent of similar men reported that they are at high risk of AIDS, while 70 percent of these same adolescents said that sexually active unmarried young adults in general are at high risk of contracting the disease. (Brazil, with by far the largest number of AIDS cases in Latin America, is second only to the United States in reported cases worldwide.[17])

The Young Adult Surveys also show that adolescents in the region initiate sexual activity at an early age; of those who reported a premarital sexual experience, 14–36 percent of the women and 42–68 percent of the men said that they had had intercourse before age 16.[18] This early initiation results in longer exposure to sexual intercourse and thus a heightened risk of contracting sexually transmitted diseases (STDs). Alberto Rizo, regional representative for The Pathfinder Fund, mentioned several other factors that when considered together with this increased exposure time, are cause for concern—those are, the definite increase in the numbers of adolescents who will be sexually active, the scarcity of studies on attitudes toward and knowledge of STDs, the persistence of misinformation and myths about STDs, and perhaps most important, the nonexistence or inaccessibility of adequate STD treatment services for adolescents.[19]

This last point—the accessibility and acceptability of various adolescent services—received much of the participants' attention throughout the conference. Speaker after speaker emphasized the need for adolescents themselves to participate in the design, promotion and evaluation of programs aimed at this age-group; in the design of curricula for sex education courses and in the teaching of those courses; in the creation and dissemination of informational materials; in the diagnosis of the specific needs of adolescents; in the sensitization of politicians and policymakers to those needs; and in the

Table 1. Age-specific fertility rates per 1,000 women aged 15–19, selected Latin American and Caribbean countries, by year of survey

Country	Rate	Year
Caribbean		
Barbados	91.7	1981
Cuba	76.8	1986
Dominican Republic	104.0	1981–1985
Grenada	152.0	1985
Jamaica	113.0	1985–1987
Trinidad &Tobago	84.0	1983–1987
Central America		
Costa Rica	99.0	1984–1985
El Salvador	138.0	1984–1988
Guatemala	139.0	1982–1986
Honduras	134.8	1986–1987
Mexico	84.0	1987
Panama	118.0	1984
South America		
Bolivia	95.0	1985–1989
Brazil	80.6	1981–1985
Chile	58.8	1987
Colombia	74.0	1984–1986
Ecuador	91.0	1982–1986
Guyana	119.0	1974
Paraguay	111.5	1987
Peru	78.9	1984–1986
Venezuela	72.0	1986

Source: See reference 8.

counseling of their peers. Isméri Conceição of the Programa de Assistência Médica e Psicossocial à Adolescência (Medical and Psychosocial Assistance Program for Adolescents—PAMPA) in São Paulo, asserted that adults need to closely monitor themselves as they interact with adolescent clients. Only then can they understand how their own preconceptions and prejudices keep them from successfully reaching adolescents.[20] Conceição also said that adolescents must be allowed to become young adults, a process that is particularly difficult for older adults to accept, since it involves their coming to terms with aging and relinquishing control over adolescents as dependent children.

Through their contributions to the conference, the adolescent participants demonstrated the potential that exists for the effective involvement of young people. They prepared and presented artwork, a lively rap song (whose lyrics told of a young girl's unwanted pregnancy) and an even livelier dramatic sketch. The drama dealt with a young woman's decision to have sex and her dilemma over what to do when she becomes pregnant, all in the face of inadequate counseling, guidance and information from the adults around her. The discussion that followed brought out the shared objective of both the adolescents and older participants that parents be more involved in the process of sex education. Both generations of conference participants agreed, however, that if this objective is to become reality, parents need to be taught how to talk with their children about sex education.

Evaluating Progress

Several successful programs in the region have enlisted the support of adolescents to teach and counsel their peers. The Centro de Orientación para Adolescentes (Adolescent Guidance Center—CORA) in Mexico City, one of Latin America's first comprehensive adolescent centers, has been in existence for more than 11 years and thus has been able to test the validity of several different approaches. According to its president, Anameli Monroy, CORA's experience has shown that sex education can be effectively integrated with other health and educational activities; that young people more readily accept information and contraceptives when these are provided by their peers; and that sex education programs can and should be combined with the distribution of barrier methods (under careful supervision by medical staff).[21] For several reasons, CORA officials chose to distribute condoms and spermicides. The reasons included the sporadic nature of adolescent sexual activity, the protection condoms provide from STDs and AIDS, the inappropriateness of the IUD for adolescent women, the high rate of incorrect use of the pill among these young women, and the high proportion of males attending the center (70 percent)—an indication that a male-oriented method would be the easiest to promote. A spermicide was distributed along with condoms both to enhance the effectiveness of the barrier method and to promote the sharing of contraceptive responsibility.

In a session devoted to law and policy, Monroy outlined CORA's strategy for running an adolescent health center within the conservative and traditional culture of Latin America. As the first project of its type, CORA started out by trying to avoid making waves. Monroy quickly learned, however, the importance of seizing an opening in the political climate and the need to be flexible and to adjust activities to fluctuations in that climate. On two occasions, the center temporarily stopped distributing condoms in response to disapproval of the center's activities and of teenage programs in general, expressed in the press. Monroy, along with Manuel Urbina, director of the family planning program of the Mexican Health Ministry, acknowledged the significant influence of the international climate on local programs and attitudes. As a result of the 1974 World Population Conference in Bucharest, for example, the Mexican government publicly changed its position on family planning and recognized family planning as an individual human right. In addition, both Monroy and Urbina noted that the AIDS epidemic has changed the government's and the public's attitudes toward sex education and condoms.

Pamela McNeil of the Women's Center in Jamaica described how a successful center for adolescent mothers managed to evolve in an initially hostile political climate. The Center boasts a well established program that provides counseling and care and also helps adolescent mothers complete their secondary school education, since many girls are not accepted back into their schools after a pregnancy. According to McNeil, the center's Programme for Adolescent Mothers deliberately adopted a low profile at first, playing down any media coverage until enough "success stories" and positive results had accumulated to let the facts speak for themselves. The Ministry of Education of Jamaica has now designated the program headquarters as an official center for high school completion exams. McNeil emphasized the merits of a conciliatory approach but pointed out that the Women's Center has consistently resisted political pressure to take partisan positions.[22]

Although in the Caribbean nations the problem is the same—high levels of unwanted childbearing among very young women—the social, historical and cultural context that must be dealt with is very distinct from that of Latin America. (Several Caribbean nations presented their experiences at the conference, but the demographic situation in Haiti was not discussed, even though the mean number of live births has been rising among adolescents and total fertility rates are still increasing.[23]) Tirbani Jagdeo of the Caribbean Family Planning Association cited the lack of substantial social and psychological penalties as contributing to the high rates of early childbearing that exist in the Caribbean. According to Jagdeo, no great social costs are brought on by adolescent childbearing because most adolescent mothers live in communities where early childbearing is the norm. Thus, parents cannot exercise the power of personal example, and communities are equally unable to exert social pressure.[24] Furthermore, Jagdeo stated that most adolescent mothers were themselves raised by a single parent. Girls assume adult roles early and frequently care for younger brothers and sisters, a situation that is common throughout Latin America as well. (Qualitative data from group sessions with adolescents in Mexico City indicated that some girls would prefer getting pregnant and caring for their own baby to caring for their numerous siblings.[25])

So that those participants working in similar fields could confer and build on their individual experiences, the conference schedule allotted time for special interest group discussions and the presentation of their conclusions. Attendees who formed a special interest discussion group on Adolescents in the Caribbean concluded that more research was needed to explain the differentials in early childbearing—specifically, why some adolescent mothers fare very well and what motivates the decision to go through with a pregnancy rather than opt for an abortion. Other groups focused on adolescent fertility in the context of traditional gender roles, basic research, the needs of children of adolescents, Knowledge, Attitudes and Practice surveys on family planning in secondary schools and school-based clinics.

Some participants formed a group entitled "Failures" so that program planners and researchers could learn from their mistakes. The group drew up a list of the mistakes that have inevitably been made over the years. The biggest repeat offender was the lack of continuous evaluation in programs, which can lead to results that are completely divorced from the project's original objectives. Also mentioned were neglecting to use available data in the design of programs, failing to present data honestly or impeding its comprehension by either too sophisticated or too simplistic a methodology, and tactical errors in the delivery of services, including having inadequate hours, having inaccessible locations and speaking to adolescents in language that they cannot identify with or understand. "Bad decision-making" by donor agencies was also cited, with the supposition that most of this is caused by human factors rather than by inadequate technical information.

Another interest group discussed the crucial area of funding for adolescent programs. The group noted that obtaining grants was complicated by the fact that no funding agency had an official policy on adolescents and that requirements imposed by donors often circumscribe creative solutions to problems, the very thing that the donor agencies request. The members recommended that the donor agencies reevaluate many of these restrictions and collaborate more with one another so that money is not wasted on duplicate projects. The discussants also decided that a "pressure group" should be formed to impress upon donors that funding is still urgently needed in Latin America and the Caribbean; participants said that some donors had "rewarded" them for running successful programs by cutting off funding with the explanation that needs were now more pressing in Africa.

Defining Solutions

The bulk of this participatory conference's agenda was addressed through the six stable working groups that met throughout the week. In the first of the sessions, which was devoted to reproductive health services and education for adolescents, participants attempted to identify the target population (adolescents at risk for pregnancy), the cultural and social barriers to family planning use, and the service approaches and settings that had worked best. There was a consensus among the geographically and professionally diverse audience that multiservice programs incorporating reproductive health care, sex education, counseling and family planning work best. The need to "de-medicalize" contraceptive services and treat the whole adolescent, attending equally to mental, physical and psychological health, was repeatedly expressed. The long list of obstacles to the successful delivery of reproductive health services and education included the beliefs that these will promote promiscuity and that motherhood is the one ideal role for women; the policy of the Catholic Church toward sexuality and contraception; the inaccessibility and unacceptability of programs geared to adolescents—to which the stereotypes and prejudices of program staff contribute a great deal; a lack of parental involvement; a general reluctance among adults to talk about or accept adolescent sexuality; and myths and misinformation about sexuality and contraceptives. Among those barriers originating with the adolescents themselves, the participants specified fatalism, lack of self-esteem and initiative, lack of expectations for the future, and a difficulty equal to that of adults in talking openly about or accepting their sexuality.

Although many—but by no means all—of the countries in the region already have important baseline data, participants in the working session on basic research and evaluation mentioned the need to better disseminate those data, to incorporate them more effectively into the design of programs and to conduct more diagnostic, anthropological and qualitative research in the area of adolescent sexuality and fertility. The conference participants strongly agreed that basic data on induced abortion among adolescents were urgently needed. Despite the belief that illegal abortion is common in many of the countries represented, virtually no statistics are available to accurately describe the problem and the way abortion fits into the adolescent fertility equation. Hospital data on admissions for abortion complications provide only a glimpse into the actual levels of morbidity and mortality caused by abortion, which is illegal throughout Latin America and the Caribbean, with the exceptions of Barbados, Belize, Bermuda and Montserrat, which recently liberalized their laws, and Cuba.[26]

In addition, the conference participants called for longitudinal studies on adolescent mothers and their children and for basic research on the gap between knowledge and behavior, on the differences in cost-effectiveness (in both human and financial terms) of preventive approaches vs. after-the-birth services, and on the attitudes and behavior of adolescent males.

In a discussion about formal sex education, the working groups specified some of the obstacles that prevent it from being taught effectively—the greater emphasis placed on factual information over exploring attitudes and processes of socialization; the lack of parental involvement and parents who are themselves misinformed; the Catholic Church (especially its control over the content of sex education courses taught in the parochial schools); restrictive laws and policies; and the fact that significant numbers of adolescents are no longer (or have never been) in school, so that alternative courses need to be developed and taught in informal settings. The conference participants felt that a universal sex education curricula was unnecessary, but that courses should impart universal values. There was unanimous agreement that more creative means of measuring the impact of sex education courses need to be developed; continuing to count the numbers of students who have taken courses or who use or do not use contraceptives will tell very little in the long run. Again, the participants requested that sex educators collaborate more effectively with researchers so that those who are designing the curricula have the scientific instruments to determine whether courses result in changes in sexual attitudes and behavior, and not only in knowledge. Finally, the conference participants acknowledged that because of the socioeconomic, religious and cultural barriers specific to Latin America, the region is not likely to adopt the kind of school-based health clinics (which can include contraceptive services) that are being introduced in the United States.[27]

Conclusions

After a week of vigorous debate, the conference participants pulled together the week's agenda in the form of recommendations to researchers, program managers and funding agencies. They agreed that the moment had arrived to initiate comparative regional studies and to share—and improve the dissemination of—available data rather than spend scarce resources repeating work that has already been done. The general need to improve cooperation came up frequently, specifically the need for researchers and service providers to collaborate more efficiently. One possible solution offered to bridge the gap between these two branches was the application of operations research to diagnose problems and test alternative solutions. There was also general agreement that the past decade has proved how necessary it is to include, from the beginning, service providers, program planners and managers, researchers, administrators, politicians and adolescents in the design, implementation and evaluation of programs. Despite the difficulties involved, a continuous evaluation component that is incorporated into the program's design was considered to be essential for running efficient and successful programs with lasting results.

These future priorities were articulated in a declaration to be submitted to the governments and governmental organizations throughout the region. The Oaxaca Declaration estimates that in Latin America and the Caribbean, a total of 22.3 million women younger than 20 currently have at least one child; it also points out that the number of young people aged 10–24 in the region will exceed 150 million by the year 2000.[28] Given these numbers, the declaration calls specifically for the formation of working groups at the local and national level to increase awareness of adolescent needs and problems and to impress upon donor agencies that the needs of Latin America are still a priority and that adolescent programs implemented there can serve as models for other regions. The document also calls for the establishment of sex education as a fundamental right of adolescents.

The Oaxaca Conference gave professionals from all over the region the opportunity to form essential networks, to share information, education and communication materials (and thus maximize resources), to exchange ideas and complementary experiences and debate new strategies and methodologies. Participants left with models of programs that have succeeded—and examples of others that have failed and why—fresh in their minds. The conference was enriched by the adolescent participants, whose presence reinforced the need for direct and honest communication between family planning professionals and the population that their work is designed to serve.

The week's discussions left little doubt that the very different approaches that researchers and service providers take toward the problem of adolescent fertility need to be brought closer together. Overall, the need for increased cooperation at all stages of research and program development emerged as indispensable to achieving further progress in the area of adolescent fertility and sexuality.

References

1. B. Shepard, The Pathfinder Fund, personal communication, Jan. 24, 1990.

2. K. Tolbert, The Population Council, personal communication, Dec. 11, 1989.

3. D. Wulf, "Teenage Pregnancy and Childbearing in Latin America and the Caribbean: A Landmark Conference," *International Family Planning Perspectives,* **12**:17, 1986.

4. C. Serrano, "Welcoming Remarks," International Conference on Adolescent Fertility in Latin America and the Caribbean, Oaxaca, Mexico, Nov. 6–10, 1989.

5. L. C. Atkin, "Adolescent Pregnancy in Latin America and the Caribbean: Psychosocial Causes and Consequences," paper prepared for the International Conference on Adolescent Fertility in Latin America and the Caribbean, Oaxaca, Mexico, Nov. 6–10, 1989.

6. G. Zeidenstein, "Adolescent Fertility and the Health and Status of Women," paper presented at the International Conference on Adolescent Fertility in Latin America and the Caribbean, Oaxaca, Mexico, Nov. 6–10, 1989.

7. B. Viel, "Keynote Address," the International Conference on Adolescent Fertility in Latin America and the Caribbean, Oaxaca, Mexico, Nov. 6–10, 1989.

8. C. W. Warren et al., "Fertility and Family Planning Among Young Adults in Jamaica," *International Family Planning Perspectives,* **14**:137, 1988; J. M. Herold et al., "Sexual Experience and Contraceptive Use Among Young Adults in Guatemala City," *International Family Planning Perspectives,* **14**:142, 1988; L. Morris et al., "Sexual Experience and Contraceptive Use Among Young Adults in Mexico City," *International Family Planning Perspectives,* **14**:147, 1988; and L. Morris, "Young Adults in Latin America and the Caribbean: Their Sexual Experience and Contraceptive Use," *International Family Planning Perspectives,* **14**:153, 1988.

9. L. Morris, "Sexual Experience and Use of Contraception Among Young Adults in Latin America," paper presented at the International Conference on Adolescent Fertility in Latin America and the Caribbean, Oaxaca, Mexico, Nov. 6–10, 1989.

10. R. Molino and M. I. Romero, "Adolescent Pregnancy: The Chilean Experience," *The Health of Adolescents and Youths in the Americas,* Scientific Publication No. 489, Pan American Health Organization, Washington, D.C., 1985.

11. E. Prada, S. Singh and D. Wulf, *Adolescentes de Hoy, Padres del Manana: Colombia,* The Alan Guttmacher Institute, New York, 1988, Table 7.1.

12. D. Ferrando, S. Singh and D. Wulf, *Adolescentes de Hoy, Padres del Mañana: Perú,* The Alan Guttmacher Institute, New York, 1989, Table 7.1.

13. M. H. Henriques et al., *Adolescentes de Hoje, Pais do Amanhã: Brasil,* The Alan Guttmacher Institute, New York, 1989, Table 7.1.

14. S. Singh and D. Wulf, *Children of Today, Parents of Tomorrow: A Portrait of the Americas,* The Alan Guttmacher Institute (forthcoming).

15. L. Morris, 1989, op. cit. (see reference 8).

16. C. Weisman, "AIDS Knowledge, Perceived Risk and Prevention Among Adolescent Clients of a Family Planning Clinic," *Family Planning Perspectives,* **21**:213, 1989.

17. H. Meyer, "Poverty, Bias: Enemies in Brazil AIDS Fight," *American Medical News,* American Medical Association, Chicago, Nov. 10, 1989.

18. L. Morris, 1989, op. cit. (see reference 8).

19. A. Rizo, "Sexually Transmitted Diseases, Including AIDS," panel presentation, International Conference on Adolescent Fertility in Latin America and the Caribbean, Oaxaca, Mexico, Nov. 6–10, 1989.

20. I. S. C. Conceição, "Aceitabilidade e Acessibilidade à População Alvo," paper presented at the International Conference on Adolescent Fertility in Latin America and the Caribbean, Oaxaca, Mexico, Nov. 6–10, 1989.

21. A. Monroy, "The Development of CORA and the Law and Policies of Mexico (1978–1989)," paper presented at the International Conference on Adolescent Fertility in Latin America and the Caribbean, Oaxaca, Mexico, Nov. 6–10, 1989.

22. P. McNeil, panel presentation on Law and Policy, International Conference on Adolescent Fertility in Latin America and the Caribbean, Oaxaca, Mexico, Nov. 6–10, 1989.

23. Institut Haïtien de l'Enfance, *Survie et Santé de l'Enfant en Haïti,* Editions de l'Enfance, Port-au-Prince, 1989, Tables 5.1 and 5.2.

24. T. Jagdeo, panel presentation on Socio-Cultural and Family Issues in Adolescent Fertility, International Conference on Adolescent Fertility in Latin America and the Caribbean, Oaxaca, Mexico, Nov. 6–10, 1989.

25. L. C. Atkin, 1989, op. cit. (see reference 4).

26. C. Tietze and S. Henshaw, *Induced Abortion: A World Review, 1986,* The Alan Guttmacher Institute, New York, 1986.

27. J. G. Dryfoos, "School-Based Health Clinics: A New Approach to Preventing Adolescent Pregnancy?" *Family Planning Perspectives,* **17**:70, 1985; and ——, "School-Based Health Clinics: Three Years of Experience," *Family Planning Perspectives,* **21**:193, 1988.

28. "Oaxaca Declaration," International Conference on Adolescent Fertility in Latin America and the Caribbean, Oaxaca, Mexico, Nov. 10, 1989.

DIGEST

Traditional Attitudes, Fear of Surgery Represent Important Barriers to Female Sterilization in Zaire

The main obstacle to acceptance of sterilization in Zaire is the belief that a wife must produce many children, as her part of the marriage bargain, according to rural and urban Zairians interviewed in 1986.[1] Women's reactions to tubal ligation were generally negative; they reported feeling pressure to have a large number of children, and said they feared that their husbands would leave them for someone else if they stopped having children. They also had fears and misconceptions about the operation itself, and they worried that the children they had might die. Zairian men questioned about sterilization also expressed concerns about child mortality, and they argued that it was a wife's duty to produce a large family. In addition, the men viewed a man who would allow his wife to be sterilized for nonmedical reasons as being dominated by her, and believed that such a woman might become either sexually promiscuous or unduly jealous or suspicious of her husband. The investigators stress the need for information, education and communication efforts to address these fears. They also recommend that health workers provide appropriate counseling and protect the confidentiality of women who decide to have tubal ligations.

Twenty-nine focus groups, each consisting of 8–12 persons, were held in six different sites within five of the 11 regions of Zaire: Kinshasa, Bas Zaire, Sud Kivu, Haut Zaire and Shaba. Each of the six sites in the study was to include five focus groups: one group for acceptors (women who had undergone tubal ligation within the last three years), two groups for potential acceptors (women who had at least five children and had been using a reversible method for at least one year) and two groups for husbands of potential acceptors (men who were not married to women in any of the other groups). Because one of the focus groups for husbands in Kinshasa could not be conducted, a total of 29 groups were studied.

In Zaire, tubal ligation is generally performed not to limit childbearing but because of maternal health. At least half of the women who were sterilized had experienced complications with previous pregnancies and/or were advised to avoid pregnancy, usually because of high parity. (Those with seven or more children expressed no regrets, but some of those with smaller families felt some remorse, even though they realized that the operation may have saved their lives.) Although several women (including some of the acceptors) approved of sterilization for economic reasons, most male and female focus-group participants were strongly opposed to this idea. The desire for large families was prevalent among both men and women: Most of the women believed sterilization to be acceptable only after a woman has had eight or more children.

Most of the women had learned about tubal ligation from health workers, and more than half of the acceptors had had the operation based on a doctor's recommendation. Others said that their husbands had suggested it because they already had enough children, and a few said that their grown children had persuaded them to do it when they began to have children of their own. Some focus-group participants thought it would be shameful to continue having children after they became grandmothers.

Responses from men and women in the focus groups indicated that acceptance of sterilization would be difficult, because of the country's strong pronatalist views. For example, one man explained that "it is the number of children that determines if the marriage has succeeded or failed." One woman said that if a woman had such an operation, the husband's family would complain that she wasn't having any children and would encourage the husband to divorce her, adding, "They will oblige him to take a second wife, even though the two of [them] were in agreement about the operation before it was done." Many women feared that their husbands might abandon them as a result of the operation.

Men and women both expressed fear of losing children they had. "Tubal ligation is not yet possible for us, because . . . you can have four children and death comes to take them all away from you," observed one participant. Other reasons given by the women who were potential acceptors included fear of dying from the operation and fear of becoming sexually unappealing. Those who knew of women who had had the procedure thought that these women were generally healthy, but they were also aware that common side effects included back pain, abdominal pain and heavy menstrual flow. Many women had misconceptions about the procedure itself. Some women thought that it involved "reversing the uterus," and many had heard of cases when the method had failed. These women were not opposed to family planning, however: Several were using Depo-Provera in hopes that this would eventually result in sterility.

Women who had accepted sterilization reported that their health was the same or improved after the operation, partly because they were free of pregnancy-related health problems. There were, however, widespread complaints of back pain, abdominal pain and menstrual problems. None of the focus-group participants had become pregnant since their operation, but many were concerned about rumors that the tubes could reopen. Most women reported no adverse effects on their marriages, and some said their marriages had improved, although few elaborated on this point. One participant reported the experience that many women feared: Her husband had, in fact, taken a new wife after she had had a tubal ligation. Even so, she reaffirmed her decision to the group: "I say let them mock me. My five children are enough for me." Despite their general satisfaction with the method, most of the acceptors said they would be afraid to recommend the operation to others, for fear that it might lead to family troubles. They felt that other women should learn about the procedure from health workers.

In the sessions with men, the question, "What would be your reaction if your wife wanted to have a tubal ligation?" provoked the most heated responses. Most of the men said they would be very suspicious of any woman who wanted this operation, unless she had serious difficulties with childbirth. One man stated, "One must then believe that the woman has other intentions—debauchery, for example." The other reaction to this question suggested that it threatened the husband's role as decision-maker. As one man said, "For my part, after the marriage, my wife is my property. It's not for her to give the orders in the house." Another man explained why both families would object to such a decision: "My wife's family could interpret that I didn't love my wife and was looking for a way to have children outside of marriage. . . . My own family would be tempted to believe that I am dominated by my wife."

In five of the six sites, responses to questions about sterilization were quite similar: Both men and women generally believed that sterilization should be performed only for health reasons, and that the main consequence of tubal ligation is often marital conflict and dissolution related to the wife's inability to have more children. The sixth site, Kimpese (in the region of Bas Zaire), was an exception, because there was far greater acceptance of tubal ligation as a contraceptive method. One woman from the area said, "If you sent us the means to have the operation right here, many would accept." The researchers suggest that this positive attitude is related to the fact that in Bas Zaire there are elements of a matrilineal system, in which the children of the couple are considered to "belong" to the family of the wife (specifically to the wife's older brother). In any case, pressure from the husband or the husband's family regarding childbearing is not as strong in Kimpese. Several of the men indicated that if their wife wanted the operation, they would support her in that decision. One man said, "It's the money that's lacking. If not, she'd already have the operation."

In most of Zaire, only about one percent or fewer women of reproductive age have had a tubal ligation; in two areas where the operation is relatively accessible, only 5–6 percent have had the procedure done. The need for sterilization remains great, however, because of high parity and its attendant risks for women. Because of the fears surrounding tubal ligation, the investigators stress the need for appropriate information, education and communication. They also suggest that health workers provide appropriate counseling for couples considering this method, specifically addressing the fears expressed by men and women. In addition, because women who have the operation may face negative reactions from family and friends, ensuring confidentiality may further increase acceptance of tubal ligation in Zaire.—*M. Witwer*

Reference

1. K. Chibalonza, C. Chirhamolekwa and J. T. Bertrand, "Attitudes Toward Tubal Ligation Among Acceptors, Potential Candidates, and Husbands in Zaire," *Studies in Family Planning*, **20**:273, 1989.

Overall Fertility Impact Of New Contraceptive Methods May Be Limited

Increasing overall contraceptive prevalence would have a greater impact on reducing unwanted births in developing countries than would replacing the least effective methods or introducing a new, highly effective method of contraception, according to a recently published analysis.[1] The investigators estimate that in Peru, for example, unwanted fertility could be reduced by anywhere from 12 percent to 54 percent, depending on the level and distribution of contraceptive use that is reached. None of these scenarios would reduce the total fertility rate (TFR) greatly, however, because the majority of childbearing in these countries is wanted.

The investigators used data from recent surveys conducted as part of the Demographic and Health Surveys (DHS) project in eight developing countries* to analyze the occurrence of unwanted births in the five years preceding the survey. TFRs in the eight countries varied widely, ranging from 2.8 lifetime births per woman in Sri Lanka to 7.3 births per woman in Burundi. The proportion of all births that were unwanted ranged from lows of seven percent in Burundi and 12 percent in Guatemala to highs of 26 percent in the Dominican Republic and 36 percent in Peru. Thus, the prevention of unwanted births could have a substantial demographic impact in several of these countries.

The researchers note that the differences by the woman's area of residence and education in the proportion of unwanted births vary substantially from country to country. For example, in Peru, about 30 percent of all births in urban areas are unwanted, compared with 41 percent in rural areas. In most of the countries, unwanted births are more common in rural areas than in urban areas, the two exceptions being Burundi (where 11 percent of urban births and seven percent of rural births are unwanted) and Guatemala (13 percent and 12 percent, respectively).

In addition, in Peru, 43 percent of all births among women with no education are unwanted, compared with 37 percent among those with a primary education, 23 percent among those with a secondary education and 27 percent among those with a higher education. The overall pattern is comparable in Colombia, the Dominican Republic and Trinidad and Tobago, and is fairly similar in Burundi and Ecuador as well. In Guatemala, on the other hand, unwanted births represent 11 percent of all births among the uneducated, 12 percent of those among women with a primary education, 18 percent of those among women with a secondary education and seven percent of those among women with a higher education.

Because levels of unwanted fertility are highest in Peru, the investigators used that country for the remainder of their analyses. They first calculated birthrates associated with contraceptive use and nonuse. Birth history data for the five-year period were used to classify each of the 60 months of exposure by whether the woman was using a method in that month and whether she had conceived during that month. Calculations are for all women aged 15–49 who were in a union (either marital or consensual). The investigators computed period birthrates (per woman-month of exposure) for mistimed, unwanted and all unintended births, by contraceptive method.

Over the five years preceding the survey, Peruvian women experienced 12.4 unwanted births and 34.3 mistimed births per 100 woman-years of exposure to the risk of pregnancy. Women protected by sterilization experienced only 0.1 unwanted births per 100 woman-years, those using the IUD had 0.9 unwanted births per 100 woman-years and those relying on the pill had 2.0 unwanted births per 100 woman-years. Rhythm users, in contrast, had 12.4 unwanted births per 100 woman-years, and women who used no method had 18.5 unwanted births per 100 woman-years.

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*Burundi, Colombia, Dominican Republic, Ecuador, Guatemala, Peru, Sri Lanka and Trinidad and Tobago.

The investigators next examined a number of scenarios to determine how greatly an increase in general contraceptive prevalence or in the use of effective methods would reduce unwanted fertility. (It was assumed that method-related fertility rates would be unchanged no matter how many women are using a particular method.) If the 14 percent of women who were relying on rhythm were to shift to the other, more effective methods according to the distribution of method use in Peru in 1986, the proportion of pill users would rise from six percent to nine percent of women, the proportion of IUD users would increase from seven percent to 10 percent, the proportion of women depending on sterilization would climb from eight percent to 12 percent and the proportions utilizing withdrawal or "other" methods would rise from five percent to eight percent each. In this scenario, the rate of unwanted births would fall by 12 percent, and the TFR would drop from 4.0 to 3.8 lifetime births per woman. The researchers conclude that "only modest gains can be realized without reducing the extent of nonuse."

If half of the 43 percent of women who were not using a method in 1986 were to do so and if the proportion of women relying on rhythm were to remain the same as in 1986, then 11 percent of Peruvian women would be using the pill, 12 percent would be relying on the IUD, 14 percent each would be depending on sterilization or rhythm, 10 percent each would be using withdrawal or "other" methods, and 21 percent would be using no method. In this scenario, the level of unwanted fertility would be reduced by 32 percent, and the TFR would be 3.6 lifetime births per woman.

The complete elimination of nonuse (which the researchers admit is an unrealistic expectation) would produce the following levels of prevalence, assuming that nonusers would be switching to rhythm as well as to more effective methods: pill, 13 percent; IUD, 15 percent; sterilization, 17 percent; rhythm, 28 percent; and withdrawal or "other" methods, 11 percent each. Under such conditions, the unwanted fertility rate would fall by 54 percent, and the TFR would be 3.4 lifetime births per woman.

Finally, the investigators calculated the effect of introducing a hypothetical new contraceptive method in Peru, one with an associated annual birthrate of about one per 100 and that would attract 25 percent of all nonusers. It is assumed that use of other methods would not change. In this scenario, 41 percent of unwanted fertility would be prevented, and the TFR would be 3.5 lifetime births per woman.

Contraceptive practice has risen steadily in Peru since 1976, especially the use of effective methods. Between 1981 and 1986, nonuse fell by seven percent; assuming that it would fall by another seven percent by 1991, the investigators estimate the unwanted birthrate in 1991, assuming a level of nonuse of 39 percent. They also inflate reliance on the other methods proportionate to the increase in the use of each method between 1981 and 1986. In such a situation, the rate of unwanted births would decrease by 15 percent, and the TFR would be 3.8 lifetime births per woman.

The researchers draw several conclusions from their exercise. First, they explain that "even in Peru," unless wanted fertility declines further, "the potential for reducing total fertility by increasing contraceptive use and reducing contraceptive failure is fairly limited." In addition, the potential demographic impact of a new method of contraception may be limited: "Even if a method with a zero failure rate were to replace all existing methods used in Peru, the TFR would decline by only seven or eight percent. The demographic potential of new contraceptive methods lies principally in attracting women who do not [practice] contraception."—*M. Klitsch*

Reference

1. C. F. Westoff, L. Moreno and N. Goldman, "The Demographic Impact of Changes in Contraceptive Practice in Third World Populations," *Population and Development Review*, 15:91, 1989.

High-Parity Women Are Found to Have Elevated Risk of Cervical Cancer

Women who have had many pregnancies are at increased risk of developing invasive cervical cancer, according to a recent study conducted in Central America and South America.[1] The study found that women who had been pregnant 6–7 times were at three times the risk of developing cervical cancer compared with women who had been pregnant once or not at all, and women who had been pregnant 12 or more times were at 4–5 times the risk. This increased risk was related only to pregnancies ending in live births. In addition, the association between high parity and risk of developing cervical cancer was stronger among premenopausal women and among women who had used oral contraceptives. The detection of two strains of human papillomavirus that are thought to be a cause of invasive cervical cancer was not significantly associated with the number of births and did not explain the strong relationship between cervical cancer and parity. The investigators suggest that the mechanism may be linked to the hormonal, nutritional or immunosuppressive effects of pregnancy or the cervical trauma caused by delivery.

Between 1986 and 1987, researchers interviewed 759 women who had been recently diagnosed with invasive cervical cancer and 1,430 age-matched controls from the same residential districts in Colombia, Costa Rica, Mexico and Panama. Interviewers obtained information on sociodemographic factors, medical history, marital status, sexual behavior, occupational and residential patterns, pregnancy and menstrual history, contraceptive use, hygiene, smoking, diet and family history. In addition, cervical cell samples were obtained from all cases and controls and were tested for the presence of human papillomaviruses using a filter in situ hybridization technique.

The analysis was restricted to women who were or had been sexually active. Major nonreproductive risk factors for cervical cancer were early age at first intercourse, multiple sexual partners, absence of prior Papanicolaou smears and limited education. The researchers adjusted for these variables, along with age of the woman, in determining relative risk estimates.

A total of 745 cases (98.2 percent) and 1,377 controls (96.3 percent) reported ever having been pregnant, with a mean number of 6.8 pregnancies among cases and 5.5 among controls. The risk of developing cervical cancer increased linearly with the number of pregnancies above zero or one: For example, the adjusted relative risk among women who had had 6–7 pregnancies was more than three times that of women who had had one or no pregnancies, and the risk increased to four and five times for women who had had 12 or 14 pregnancies, respectively. This relationship was strongest among women in Mexico City, where the risk among those with more than 10 pregnancies was five times greater than among those with one or no pregnancies; the risk for comparable women in Bogotá was three times greater. In all four countries, the association existed only for pregnancies resulting in live births; pregnancies ending as miscarriages, abortions or stillbirths did not contribute to an increased risk of developing cervical cancer.

A reduced risk for cervical cancer was found among women who had ever had a prenatal checkup, who had experienced complications during pregnancy and who had ever had a cesarean section. Each of these three associations persisted after adjustment for the others. The reasons for these associations are unclear, but the researchers suggest that they may reflect social class effects. No association was found with complications during or after delivery or with sexual intercourse either during pregnancy or within the first two months after delivery.

The number of births appeared to be a stronger risk factor among premenopausal women than among those who had completed menopause: Among premenopausal and postmenopausal women, the relative risks associated with 10 or more live births were 4.0 and 2.3, respectively. Smoking and oral contraceptive use were not found to be significant risk factors among women in this study. However, oral contraceptive use was associated with a greatly increased cancer risk among women of high parity: Women who had had 10 or more births and had used the pill had a ninefold increased risk compared with those who had had one or no births, while women of the same parity who had not taken the pill had just a threefold increased risk. Detection of human papillomavirus type 16 or type 18 was associated with an overall increased risk for cervical cancer, but the infection rate did not rise as the number of births increased.

The researchers note that others may have failed to find an association between parity and cervical cancer because there are few populations of women with such high parity. They suggest several potential explanations for the observed association: For example, pregnancy's immunosuppressive effect may increase susceptibility to certain infectious agents; alternatively, cervical cancer may be influenced by the hormonal changes that occur during pregnancy, or may be linked with folacin deficiency or other nutritional effects. The researchers also observe that trauma to the cervix during delivery may play a role in the etiology of cervical cancer, thereby increasing the risk for multiparous women.—*M. Witwer.*

Reference

1. L. A. Brinton et al., "Parity as a Risk Factor for Cervical Cancer," *American Journal of Epidemiology,* 130:486, 1989.

Gynecologic Disorders Are Common in Rural Areas Of India and Bangladesh, but Treatment Is Lacking

Reproductive tract diseases are widespread in rural India and Bangladesh, according to two recent studies. A study looking at a wide range of gynecologic problems among rural women in India found that although only about half reported gynecologic symptoms, nearly all had one or more reproductive tract disorders, with an average of almost four per woman. Infections accounted for half of these disorders.[1] Furthermore, a study of gynecologic infections among women in rural Bangladesh revealed that slightly less than one-quarter of those surveyed reported symptoms and two-thirds of the symptomatic women were found to have clinical evidence of such infection.* The study also found that IUD users and sterilized women were four times as likely as nonusers to report symptoms of gynecologic disease and over six times as likely to show clinical evidence of disease.[2]

The Indian Study

The research in India was conducted in two villages in Gadchiroli, a rural district of Maharashtra state. All women in those villages who were 13 and older or had reached menarche were invited to participate in the study, whether or not they had symptoms of reproductive tract disease. Out of 1,104 eligible women, 654 (59 percent) agreed to participate. These women were interviewed and all but four were given a physical examination. Those who were found to have a disease were offered treatment. (A random sample comprising 25 percent of the nonparticipants found that the women who participated did not differ greatly from those who did not.)

Of the 650 participants, 71 percent (462) were currently married and living with their husbands. Fifty-five percent (254) of this group were using a method of contraception: Most were themselves sterilized (82) or were protected by their husband's vasectomy (151). Female contraceptive methods were being used by 94 women at the time of the study, and another 29 had used these methods in the past. Overall, however, only 22 percent of ever-married women had used contraceptives.

A total of 360 women (55 percent of all who participated) had one or more gynecologic complaints. In addition, 197 reported low backache and 86 reported lower abdominal pain. On examination, 559 were found to have one or more gynecologic disorders; the average was 3.6 disorders per woman. Infections accounted for half of the cases diagnosed: Overall, 347 women (62 percent of those with a gynecologic disorder) were diagnosed as having bacterial vaginitis, 190 had candida vaginitis, 157 had pelvic inflammatory disease, 78 had trichomonas and 68 (11 percent) had syphilis. In addition, 272 had cervicitis, 269 had dysmenorrhea and 255 had cervical erosion. No cases of carcinoma were found.

Women with a contraceptive history were more likely than never-users to suffer from menstrual disorders (75 percent vs. 46 percent), vaginal infections (98 percent vs. 81 percent), cervical diseases (83 percent vs. 67 percent) or pelvic inflammatory disease (48 percent vs. 23 percent). However, contraceptive use can be a factor in only a small proportion of this morbidity, because 78 percent of the married women had never used any contraceptive method.

Although 55 percent of the Indian women with reproductive tract problems were aware of having a disorder, only eight percent had ever had a gynecologic examination or treatment. The investigators point out that even symptomless women were likely to have one or more reproductive tract disorders, indicating that symptoms are an insensitive tool for screening in the presence of a high prevalence rate. Moreover, reliance on gynecologic symptoms described by the women when their histories were taken often resulted in underestimates—especially in regard to vaginal discharge and menstrual problems—because of the women's concept of what is normal.

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*For cultural reasons, only symptomatic women could be referred for examination.

The Bangladeshi Study

Currently married women of reproductive age living in the Comilla district villages of Bangladesh receive comprehensive maternal and child health and family planning services from the Matlab field station of the International Centre for Diarrhoeal Disease Research as part of an ongoing research effort called the Family Planning Health Services Project (FPHSP). The Matlab project is a village-based umbrella program conducted in four blocks of 20 experimental villages each and in a comparison area. Every two weeks, 80 community health workers visit the area to provide maternal and child health and family planning services and to monitor demographic events. The health workers are literate married women who practice contraception and are from respected families in the community.

Each of the four blocks of the area has a community-donated health center that provides basic health services to support the field activities of the health workers. Each center is staffed by a female paramedic who has completed an 18-month government-sponsored course in family planning services, pregnancy, delivery and basic maternal and child health care. A female physician provides further technical support.

A target population was identified by random selection of 40 (50 percent) of the health workers; these women administered a standardized questionnaire to all of their clients who were using IUDs or hormonal methods (oral contraceptives and injectables) or had been sterilized, and to a 20 percent subsample of their clients who were not practicing contraception. During visits to the clients' homes, the health workers collected information on the women's reproductive history, contraceptive use, menstruation-related behavior, sexual behavior and history of reproductive tract symptoms.

Of 3,238 potential participants, 149 did not meet enrollment criteria, 155 were not at home on repeated visits and five refused to participate. The remaining 2,929 women were enrolled in the study. A total of 640 participants reported symptoms suggesting reproductive tract infection. Among those reporting symptoms, 97 percent described abnormal discharge, and 94 percent of those said the discharge had been present for at least 60 days.

For all analyses of data by birth control method, the investigators omitted women who could not be classified either as nonusers or as current users of a single method. The criteria used for these classifications included both duration of current method use and length of time since the most recent prior method had been dropped. These periods, which varied according to method, were based on the time necessary for a given method to start or stop producing a physiologic effect. According to the study criteria, the sample included 396 current nonusers and 2,330 users of a single method; 203 women did not meet the criteria for either classification. Among the single-method users, 452 currently used the IUD, 1,255 relied on hormonal methods and 623 were sterilized. The percentage of women reporting symptoms varied by contraceptive method: IUD users and sterilized women were each approximately four times as likely as nonusers to report abnormal discharge or lower abdominal pain. Users of hormonal methods, on the other hand, were slightly less than twice as likely as nonusers to report these symptoms.

The women who reported vaginal discharge suggestive of lower reproductive tract infection or nonmenstrual or abnormal menstrual lower abdominal pain (which are suggestive of upper tract infection) during the week prior to interview were referred to the local health center for pelvic examinations and laboratory testing. Of the 640 symptomatic women, 486 underwent examination, resulting in 472 evaluable laboratory studies. The remaining 154 women (24 percent) refused to be examined. Overall, 68 percent of the 472 symptomatic women examined showed evidence of vaginal, cervical or pelvic infection. When they analyzed all participants by method used, the investigators found that sterilized women were the most likely to be infected (24 percent), followed by IUD users (22 percent), users of hormonal methods (six percent) and nonusers (four percent).

In a multivariate analysis of 2,542 women for whom information on all relevant variables was available an increased risk of infection was significantly associated with current use of an IUD or with sterilization, with use of rags during menses, with prior use of any contraceptive method and with more than six years' use of the woman's current method. Pelvic infection was uncommon among all method users. Cervical infection occurred most frequently among IUD users, and vaginal infection was most frequently diagnosed in IUD users and sterilized women and was least common among nonusers and users of hormonal methods.

The prevalence of gynecologic and sexual disorders found in these two investigations suggests that reproductive care to women should be broadened beyond that currently provided by maternal and child health and family planning programs.

The findings from these studies suggest that in both Bangladesh and India, certain family planning interventions may be associated with an increased risk of reproductive tract infections. However, women who used contraceptives tended to consider any gynecologic or sexual disorder as a side effect of method use. In both countries, inexpensive, clinic-based services directed at accurate diagnosis and treatment of reproductive tract infections would strengthen maternal and child health and family planning programs by decreasing method-associated side effects and offering essential reproductive health care in a socially acceptable setting.—*F. Althaus*

References

1. R. A. Bang et al., "High Prevalence of Gynaecological Diseases in Rural Indian Women," *Lancet*, 1:85, 1989.

2. J. N. Wasserheit et al., "Reproductive Tract Infections in a Family Planning Population in Rural Bangladesh," *Studies in Family Planning*, 20:69, 1989.

Indonesian Fertility Rate Falls As Age at Marriage, Modern Method Use Rise

Fertility in Indonesia appears to have declined rapidly over the past decade: The total fertility rate (TFR) fell from 4.3 lifetime births per woman in 1981–1983 to 3.3 in 1984–1987. In addition, young women marry and start childbearing later and want fewer children than their older counterparts. Knowledge of contraceptive methods is almost universal: About half of currently married women are practicing contraception, and almost all current users rely on modern methods (the pill, the IUD or injectables). These are some of the major findings of the National Indonesia Contraceptive Prevalence Survey (NICPS) carried out in 1987 as part of the worldwide Demographic and Health Survey project.[1]

The Indonesian archipelago, lying between Asia and Australia, is made up of five major islands (Sumatra, Java, Kalimantan, Sulawesi and Irian Jaya) and more than 13,000 smaller ones, 6,000 of which are inhabited. Indonesia's multiethnic population is the fifth largest in the world; at the current growth rate of 2.2 percent annually, it will reach 216 million by the year 2000.

The NICPS data are based on interviews with 11,884 ever-married women aged

DIGEST

15–49 living in 20 of Indonesia's 27 provinces, which contain 93 percent of its population. Overall, 23 percent of the women interviewed were uneducated, 40 percent had some primary schooling, 23 percent had completed primary school and 13 percent had a secondary or higher education. There has been considerable improvement in the education of women in the last 30 years: Only eight percent of women aged 15–19 were uneducated, compared with 47 percent of those aged 45–49. Overall, 73 percent of the women lived in rural areas, with the remaining 27 percent living in urban areas. Women living in urban areas generally were better educated than those in rural areas: Almost 30 percent of urban women had a secondary or higher education, compared with seven percent of rural women; 27 percent of rural women were uneducated, compared with 12 percent of urban women. More than 92 percent of the women surveyed were Muslim; the remainder were Christian (five percent), Hindu (two percent) or Buddhist (one percent).

Marriage and Fertility

In Indonesia, marriage occurs early and is nearly universal. The proportion of ever-married women rises from 90 percent of those aged 25–29 to 99 percent of those aged 40–49. However, the age at which women enter marriage has risen over the past 25 years: The median age at first marriage was 16.5 years among women aged 45–49, 17.6 among 30–34-year-olds and 19.6 among 20–24-year-olds. Seventy-nine percent of women aged 45–49 had married before age 20, compared with only 53 percent of those aged 20–24. Urban women were about two years older at first marriage than were their rural counterparts (18.8 vs. 16.6), and the difference in median age at marriage between older and younger urban women was substantial (17.7 among 45–49-year-olds vs. 20.3 among 25–29-year-olds). Education is also an important factor in age at first marriage: Women with a primary education were about one and one-half years older at first marriage than were women with no education (17.5 vs. 15.8, respectively), and women with a secondary or higher education were almost four years older when they married than were women with a primary education.

For the 1984–1987 period, the TFR in Indonesia was 3.3 lifetime births per woman, down from 4.3 births per woman in 1981–1983. The TFR was lower among urban women than among rural women (2.8 births per woman vs. 3.6 per woman), and had declined more quickly among urban women than among rural women between the two periods (by 24 percent and 20 percent, respectively). Women with a secondary or higher education had an average of one lifetime birth fewer than those who had a primary education only (2.4 vs. 3.4). In addition, between 1981–1983 and 1984–1987, the TFR among women with more education declined faster than did the TFR among women with less education (25 percent vs. 16 percent).

Age at first birth has risen among urban women over the past 25 years: On average, women aged 45–49 had their first child at 20.4 years, while those aged 25–29 were 21.7 years old at first birth. Among rural women, however, age at first birth has remained at just under 20.

On average, women who had had a child in the three years preceding the survey breastfed for 25 months and experienced postpartum amenorrhea for 11 months. Although the mother's age had no significant effect on the length of breastfeeding, the mean duration of breastfeeding was considerably longer among rural women than among urban women (27 months vs. 21 months), and uneducated women breastfed for much longer than did women with a secondary or higher education (28 months vs. 19 months). Because urban women and educated women breastfed for shorter periods of time than rural or uneducated women, they experienced postpartum amenorrhea (and therefore insusceptibility to pregnancy) for a shorter time. Prolonged sexual abstinence after childbirth is not customary in Indonesia (the average duration is five months) and therefore does not affect exposure to risk of pregnancy.

Contraceptive Knowledge and Use

Knowledge of family planning methods is high in Indonesia: Overall, 94 percent of ever-married women and 95 percent of currently married women recognized at least one method, and almost all of these women recognized at least one modern method. The most widely known methods were the pill, injectables and the IUD (recognized by 91 percent, 84 percent and 82 percent of currently married women, respectively), followed by the condom (65 percent), female sterilization (53 percent) and NORPLANT® (30 percent). Of the traditional methods (herbs, abdominal massage, withdrawal and periodic or prolonged abstinence), only periodic abstinence and withdrawal were known to more than 15 percent of currently married women, which may in part reflect the fact that the other three methods were not probed. There was little difference by urban-rural residence, region or education in the proportion of women recognizing modern methods, except that women with no education were less likely than women in any of the other education groups to know of a modern method (83 percent vs. 96–100 percent).

The proportion of women who recognized any family planning method increased sharply during the decade preceding the study. According to the Indonesian Fertility Survey, which was conducted in Java and Bali in 1976, 77 percent of ever-married women recognized a family planning method, 11 percent knew about female sterilization and 17 percent had heard of injectables.[2] The corresponding proportions for the 1987 NICPS were 95 percent, 57 percent and 84 percent.

Sixty-two percent of ever-married women and 65 percent of currently married women had ever used a method. Almost all of those who had ever used family planning had used a modern method at some time, and ever-use was highest in the middle age-groups (25–39 years old). Forty-eight percent of currently married Indonesian women were practicing contraception at the time of the survey, with 44 percent using modern methods and four percent using traditional methods. The most commonly used methods were the pill (16 percent), the IUD (13 percent) and injectables (nine percent), followed by female sterilization (three percent), condoms (two percent), periodic abstinence and withdrawal (one percent each) and male sterilization and NORPLANT (less than one-half of one percent each).

Women in the middle of their childbearing years were more likely to be using a family planning method than were older or younger women: The highest rate of use (59 percent) was among women aged 30–34. Women under 30 were more likely to be using the pill and injectables, while those over 30 were more likely to rely on the IUD, condoms or male or female sterilization. Current use was more common among urban married women than among those living in rural areas (54 percent vs. 45 percent). The most popular methods among urban women were the IUD and the pill (almost 13 percent each), followed by injectables (12 percent), female sterilization (six percent) and condoms (four percent). Higher proportions of rural women used the pill (17 percent) and the IUD (13 percent), and lower proportions relied on injectables (eight percent), female sterilization (two percent) or condoms (less than one percent). Reliance on family planning increased with education: Overall, 33 percent of currently married women with no education were using a method, compared with 64 percent of those with a secondary or higher education. Although pill use did not vary much by educational level, the use of almost all other methods, including traditional ones, was higher among more educated women. Contraceptive use increased rapidly with number of living children, reaching a peak among women with three children and declining among those with four or more children. Among currently married women who were practicing contraception, 73 percent of those who were childless used the pill, compared with 28 percent of those who had four or more children.

During the 25 years before the survey, a dramatic change occurred in the number of living children women had when they began practicing contraception: Six percent of ever-married women aged 45–49 at the time of the survey had begun using contraceptives when they had no child or one, compared with almost 46 percent of those aged 20–24. This trend may indicate a decrease in preferred family size as well as an increase in the use of contraception for birthspacing.

Fertility Expectations

In 1987, currently married women wanted 3.2 children, on average. The ideal number of children was strongly related to age and education: Ever-married women aged 45–49 wanted 3.8 children, while those aged 15–19 wanted 2.6 children. Women with no education wanted 3.4 children, on average, while those with a secondary or higher education wanted 2.9 children. There was little difference in the number of children wanted by rural and urban women.

Over 51 percent of the currently married women interviewed wanted no more children or were sterilized. The proportion intending to stop childbearing rose with increasing number of children, and was higher among urban women (58 percent) than among their rural counterparts (49 percent). Overall, the proportion of women who wanted no more children fell with increasing education, but that pattern changed with increasing parity: Among women with one child, the proportion wanting no more children fell from 26 percent of those with no education to 12 percent of those with a secondary or higher education, while among those with four or more children, those proportions were 75 percent and 90 percent, respectively. Of the 42 percent of currently married women who wanted to have more children, the majority did not want to do so soon: Twenty-three percent wanted another child within two years, while 65 percent wanted to wait at least two years.

Of all births in the five years preceding the survey, 75 percent were wanted at the time of conception, 18 percent were mistimed (i.e., they were wanted at a later time) and six percent were unwanted. The proportions of unwanted or mistimed births increased substantially with birth order: Of first births, less than one-half of one percent were unwanted and five percent were mistimed, but for births of order four or higher, 13 percent were unwanted and 27 percent were mistimed.

Overall, 41 percent of currently married women were exposed to the risk of pregnancy, were not practicing contraception and did not want another birth immediately (i.e., they were in need of family planning). More than half of these women wanted no more children, and slightly less than half wanted to postpone the next birth for at least two years. However, only about one-third of them planned to use family planning in the future. A larger proportion of rural than of urban women were in need, primarily because of a greater desire for spacing births (43 percent vs. 35 percent). Of those who were in need, almost identical proportions of urban and rural women intended to use family planning. The proportion of women in need was almost twice as high among women with no education as among those with a secondary or higher education (52 percent vs. 28 percent). Moreover, only eight percent of uneducated women in need intended to use a family planning method, compared with 16 percent of those with a primary education and 14 percent of those with a secondary or higher education.

Infant Mortality and Health

During the five years before the survey, 72 percent of all births took place at home and only 20 percent took place in a hospital or health center. Moreover, 61 percent of births were attended by traditional birth attendants, 32 percent by trained nurses or midwives and four percent by doctors. Medical personnel (doctors, nurses or trained midwives) assisted in about 70 percent of births in urban areas but in only about 25 percent of those in rural areas. Assistance by medical personnel was also more common for births to women with a secondary or higher education.

During the 15 years preceding the survey, infant and child mortality in Indonesia decreased substantially, but remained high. Between the periods 1972–1976 and 1982–1987, infant mortality declined by 13 percent (from 81 to 70 deaths per 1,000 births), child mortality dropped by 42 percent and mortality for all children under five decreased by 25 percent. On average, during the 10 years preceding the survey, 118 of 1,000 boys and 105 of 1,000 girls did not live until their fifth birthday. Infant mortality was higher for births to rural mothers (84 per 1,000) than for births to urban mothers (51 per 1,000), as was child mortality (43 and 28 per 1,000, respectively). The mortality rate among infants born to uneducated mothers (99 per 1,000 births) was almost three times the rate among infants born to mothers with secondary or higher education (34 per 1,000). Other factors associated with higher infant and child mortality were extremes in the mother's age at birth, a birth order of seven or higher and short intervals between births.—*F. Althaus*

References

1. Central Bureau of Statistics, National Family Planning Coordinating Board and Institute for Resource Development/Westinghouse, *National Indonesia Contraceptive Prevalence Survey 1987*, Jakarta, Indonesia, and Columbia, Md., Jan. 1989.

2. Central Bureau of Statistics, *Indonesia Fertility Survey 1976: Principal Report*, Vol. I, Jakarta, Indonesia, 1978.

Modern Contraception Is Little Known, Rarely Used In Ondo State, Nigeria

Despite some preliminary signs of fertility decline in Ondo State, Nigeria, fertility rates remain relatively high: Women can expect to bear six children, on average, and they generally believe that that number of children is ideal. Only about half of the married women have heard of a contraceptive method, and just six percent of married women are currently practicing contraception. Breastfeeding is virtually universal and is practiced for about 18 months, but postpartum sexual abstinence lasts even longer and is the single most important determinant of birth intervals. These are some of the main findings of the Ondo State Demographic and Health Survey (ODHS), conducted in 1986 as part of the Demographic and Health Surveys (DHS) project.[1]

DIGEST

Because no officially accepted national census has been conducted in Nigeria since 1963, there was considerable uncertainty by the 1980s about the size and distribution of the nation's population. Ondo State, located along Nigeria's Atlantic coast, is thought to have had approximately 3.3 million residents in 1986, out of a total Nigerian population estimated at 100 million. It is believed that the state's population is 85–90 percent Yoruba and 85–90 percent Christian.

Because the national government's effort to divide the country into enumeration areas—to establish a population-based sample frame in the absence of reliable census data—was most advanced in Ondo State, the survey was limited to that state, making the ODHS one of the few DHS projects to cover only one region of a country rather than the entire country. A total of 4,213 women aged 15–49 were surveyed. Forty percent lived in urban areas, 52 percent were in rural areas and eight percent lived in the river valleys of the coastal regions. Eighty-five percent were Christian, 13 percent were Muslim and two percent followed other religions. Eighty-six percent were of Yoruba background. Thirty-seven percent had no education, 24 percent a primary education, 33 percent at least some secondary schooling and six percent some postsecondary education. Eighty-one percent of 15–19-year-olds and 64 percent of 20–24-year-olds had at least some secondary schooling, compared with nine percent and three percent of those 40–44 and 45–49, respectively.

Marriage and Fertility

Sixty-seven percent of respondents were currently married, with the proportion ranging from 57 percent of 20–24-year-olds to 95–98 percent of 30–44-year-olds. Thirty percent were single, and three percent were widowed, divorced or separated. Overall, 46 percent of married respondents reported that they were in a polygynous union, ranging from 25 percent of 20–24-year-olds to 46 percent of 30–34-year-olds and 62 percent of 45–49-year-olds. Polygynous unions were most common among women living in riverine areas (56 percent), among those with no education (55 percent) and among Muslims (57 percent) and other non-Christians (62 percent). However, such unions also were often found among urban residents (40 percent), among those with at least some secondary education (23 percent) and among Catholics and Protestants (42–44 percent), leading the authors of the survey report to refer to the "general acceptance [of polygyny] throughout the population."

The median age of entry into first union varied little by age-group: Among those aged 45–49, the median was 19.9; it fell to 18.9 among 30–34-year-olds, but rose again to 20.2 among 25–29-year-olds. However, the percentage who were single at age 20 has increased somewhat in recent years: Forty-eight percent of 45–49-year-olds and 40 percent of 30–34-year-olds reported that they were single at age 20, compared with 52 percent of 25–29-year-olds and 62 percent of 20–24-year-olds. Overall, women with at least some secondary education entered their first union at a mean age of 22, compared with a mean age of about 19 among those with less education.

The total fertility rate (TFR) for the five years preceding the survey was 6.0 births per woman. The five-year TFR was virtually the same in urban and rural areas (5.9 and 6.0 births per woman, respectively), but was somewhat higher in the riverine areas (6.4 per woman). The TFR among those with no education was 6.7 births per woman, and the TFR among those with a primary education was 7.1 per woman; the rate among respondents with at least some secondary schooling, however, was 5.4 births per woman. The TFR was somewhat lower among Protestants (5.8 births per woman) than among Catholics (6.6), Muslims (6.4) or other women (6.3).

A comparison of TFRs for the two three-year periods preceding the survey indicates that fertility in Ondo State may have declined somewhat, from 6.3 lifetime births per woman in 1981–1983 to 5.6 per woman in 1984–1986. The possibility of a recent fertility decline is supported by the fact that women 40–49 years of age had had a mean of 6.9 children at the time of the survey, indicating that fertility in the preceding two decades must have been higher than at the time of the survey.

Currently married respondents had had a mean of 4.7 births at the time of the survey, and 40 percent of these women had had six or more births. Almost all women over age 30 had had a child, indicating that primary infertility is rare in this area of Nigeria. The median age at first birth in Ondo State was 20.6, and varied little by the woman's age at the time of the survey. Forty-seven percent of 30–34-year-olds and 39 percent of 25–29-year-olds had had their first birth by age 20, compared with just 28 percent of 20–24-year-olds. The greatest differential in age at first birth was by education: Half of women with some secondary education had had their first child by age 23, compared with a median of 20 among women with less education.

Breastfeeding is common in Ondo State, with 93 percent of recent births being breastfed for at least three months, and over 70 percent for at least one year; the mean duration of breastfeeding was 18 months. While postpartum amenorrhea lasted for 14 months, on average, postpartum sexual abstinence was observed for an average of 23 months. The report concludes that "sexual abstinence plays a crucial role in determining pregnancy intervals." However, reliance on abstinence may be declining: Women under 30 abstained for 20 months, on average, while those 30 and older abstained for an average of 25 months. In addition, urban residents abstained for 20 months, while rural women did so for 26 months. Those with some secondary education breastfed for only 14 months and abstained for just 18 months, on average, while women with no education breastfed for 20 months and abstained for 27 months. In addition, Catholics and Protestants breastfed for 3–4 months less, on average, than Muslims and abstained for 4–5 months less.

Contraceptive Knowledge and Use

Respondents were first asked what contraceptive methods they knew of, and then were read descriptions of various methods and were asked which methods they recognized. Only 51 percent of currently married respondents knew of a contraceptive method, with the best-known methods being injectables (41 percent), the pill (37 percent), female sterilization (25 percent) and the IUD (24 percent). For the most part, contraceptive knowledge was greater among women in their late 20s and early 30s, among urban women and among those with a secondary education. Almost all women who had heard of a method knew where they could obtain it; the vast majority in each case said they would go to a government hospital.

Thirteen percent of currently married women had ever used a method of contraception, while six percent were practicing contraception at the time of the survey. Two percent relied on periodic abstinence and one percent each used the pill, injectables or the IUD. A subsample from the 1981–1982 Nigeria Fertility Survey, restricted to respondents from Ondo State, indicates that at that time, only about one percent of all respondents were practicing contraception, compared with nine percent of all women in the ODHS. Thus, there appears to have been a slight increase in contraceptive practice.

Surprisingly, current use was higher among all women (nine percent) than among currently married women, apparently because of relatively high levels of use among young unmarried women. For example, only three percent of currently married 15–19-year-olds and five percent of 20–24-year-olds were using a method, compared with 12 percent of all 15–19-year-olds and 13 percent of all 20–24-year-olds. According to the survey report, this differential is probably related to the fact that many young married women are either pregnant or postpartum or want to start their families, and thus not in need of family planning; in addition, many single women may be practicing contraception to avoid a premarital pregnancy.

Urban women were twice as likely as rural women to be current users (8.9 percent vs. 4.5 percent), and only one percent of riverine dwellers were practicing contraception. Fifteen percent of women with at least some secondary education were using a method at the time of the survey, compared with six percent of those with a primary education and three percent of those with no education. Protestants were more likely to be using a method (seven percent) than were Catholics (four percent) or Muslims and other women (three percent each). Two percent of those with no living children were using a method, compared with 5–7 percent of all other women.

Seventy-seven percent of women who knew of at least one contraceptive method approved of family planning; 60 percent knew their husband's attitude, and nearly three-quarters of these reported that he approved of family planning. Rural women were somewhat less likely to say that their husband approved than were other women, while those with at least some secondary education were far more likely to say so than were less educated women (57 percent, compared with 29–40 percent). Forty-two percent of all women who knew of at least one method said they had discussed family planning with their husband at least once in the preceding year.

Twenty-three percent of currently married women said that they wanted no more children, 38 percent wanted another child but not in the next two years, 20 percent wanted another within two years, seven percent wanted another but did not know when and 11 percent were undecided. Thus, 65 percent wanted another child, but 61 percent either did not or wanted to wait at least two years until their next birth.

The proportion who wanted no more children ranged from less than five percent among those with fewer than three children to nearly 50 percent of those with six or more children. In addition, the proportion who wanted to have a child within the next two years was greater than one-third only among those with no living children; more than half of women with 1–3 children preferred to wait at least two years before having another child. Likewise, 59–62 percent of women 15–29 years of age wanted to wait at least two years to have another child. Those who had no education were far more likely than women with some education to want no more children (32 percent, compared with 12–15 percent), and this was true regardless of the woman's number of living children.

Overall, 21 percent of married women wanted no more children and were not practicing contraception, and another 54 percent wanted to wait at least two years to have another child but were not using a method; thus, 75 percent of women in Ondo State could be defined as in need of family planning. Those with no education were more likely to be in need, no matter how the measure is defined: Thirty-one percent of women with no education were not using a method and wanted no more children, compared with 13 percent of those with some primary schooling and eight percent of those with some secondary education; likewise, 79 percent of those with no education were not practicing contraception and either wanted no more children or wanted no more in the next two years, compared with 74 percent of those with some primary education and 66 percent of those with at least some secondary education.

Maternal and Infant Health

The infant mortality rate for Ondo State over the 1981–1986 period was estimated at 56 deaths per 1,000 live births, while the child mortality rate was calculated to be 55 deaths per 1,000. Thus, the total mortality rate among children under five at the time of the survey was over 100 deaths per 1,000 live births. Infant mortality rates were substantially higher among women who gave birth before age 20 and among women with birth intervals shorter than two years. Both infant and child mortality were substantially lower among women with at least some secondary education, although these rates were based on small numbers of women. Approximately one in five of the children born to the women surveyed had died by the time of the survey, including 27 percent of those born to 45–49-year-olds.

Eighty percent of the women surveyed said they had received prenatal care in the past five years from a doctor, nurse or midwife, and 71 percent had received a tetanus injection. Furthermore, 56 percent said they had been assisted at childbirth by a nurse or midwife. The largest divergence from these levels was in the riverine areas of Ondo State, where only 17 percent of women had received prenatal care from one of these sources, only 13 percent had been vaccinated against tetanus and just nine percent had had professional assistance at delivery.—*M. Klitsch*

Reference

1. Medical/Preventive Health Division, Ministry of Health, and Institute for Resource Development/Macro Systems, Inc., *Ondo State, Nigeria, Demographic and Health Survey, 1986*, Akure, Ondo State, Nigeria, and Columbia, Md., 1989.

In Trinidad and Tobago, Fertility Rates Are Low And Method Use Is High

Women in Trinidad and Tobago will have about three children, on average, if current rates of childbearing continue. In addition, nearly 100 percent of women currently in a union know of at least one modern method and over half of women in a union practice contraception. Among women with less than a primary education, female sterilization is the most popular method, while among those with at least a secondary education, the pill is the most widely used method of contraception. These findings represent the main highlights of the 1987 Trinidad and Tobago Demographic Health Survey (DHS), which studied 3,806 women 15–49 years of age.[1]

Trinidad and Tobago, a republic comprising two Caribbean islands, has a population of about 1.2 million. Africans and East Indians are the two largest ethnic groups, each making up about 41 percent of the population. Most of the residents are either Roman Catholic or Hindu. Literacy is nearly universal in the republic, and in 1980, 95 percent of the citizens reported having had at least some primary schooling.

Marriage and Fertility

According to the 1987 DHS, 41 percent of women in Trinidad and Tobago are legally married. An additional 14 percent are in a common-law union, another 14 percent are involved in a sexual relationship with someone with whom they do not live (i.e., a "visiting union"), eight percent are widowed, divorced or separated and 23 percent have never been in a union of any kind. The median age at first union in most age, ethnic, residence and education subgroups is around 20. However, age at first union is lower among those with less than a primary education (17.9) and substantially higher among those with a secondary education or more (24.1). In addition, women aged 45–49 have a median age at first union of 18.8, indicating that women now are entering their first relationship somewhat later than they did several decades ago.

The mean number of children among all women in Trinidad and Tobago is 2.1, and among those in a union, 2.7. Only 11 percent of women 15–19 and 46 percent of those 20–24 have had a child. Seventy-five percent of women aged 25–29, however, have had one or more children, and 96 percent of those 45–49 have had at least one child. Childbearing begins earlier among women currently in a union: Forty-seven percent of 15–19-year-old women in a union, 70 percent of those 20–24 years old and 84 percent of those 25–29 years old have had a child. Only two percent of 45–49-year-old women currently in a union have never had a child.

For the five years preceding the survey, the total fertility rate (TFR) was 3.1 births per woman, down from 3.3 in 1981–1983. Although the fertility rate among urban women did not change between 1981–1983 and 1984–1987 (3.0 in both periods), the TFR decreased from 3.6 to 3.2 among rural women. The TFR decreased among women with either a partial or a complete primary education, increased among those with a partial secondary education and remained the same among women who had completed their secondary education. Nevertheless, the TFR for women with less than a primary education was still substantially higher in the latter period than that for women with at least a secondary education (3.6 vs. 2.3).

Ethnicity is also associated with fertility: The current TFR among women of Indian descent is 2.8, while that among those of African origin is 3.5. Further, while the Indian TFR has decreased by about 10 percent since the early 1980s, the African TFR has remained almost the same.

A comparison of the current TFR with the mean number of children ever born to women aged 40–49 reveals a notable change in fertility in recent years. The mean number of children ever born to women 40–49 is 4.3, over one-third higher than the current TFR (3.1). The differences between the TFR and fertility among 40–49-year-olds are most pronounced among rural women, women with the least education and women of Indian descent, indicating that fertility declines have been greatest in these subgroups.

At the time of the survey, the median age at first birth among women aged 25–49 was 21.7. The data reveal that there has been a steady increase in the median age at first birth: Among 45–49-year-olds, the median is 20.5, compared with 21.6 and 22.2 among those 35–39 and 25–29, respectively. Women 25–49 with a secondary education or more first gave birth at a median age 5.9 years older than those who never completed their primary schooling. Among women aged 25–29, 40–44 and 45–49, those of African descent had a slightly higher median age at first birth than those of Indian origin. In addition, urban women were almost a year older than rural women at first birth.

Most women in Trinidad and Tobago breastfeed their babies (89 percent). However, the duration of breastfeeding is relatively short. In 1987, the overall median duration was 6.3 months. The median duration of amenorrhea, on the other hand, was only 2.3 months. In addition, most women did not practice abstinence for more than two months following delivery. Thus, women who wish to prevent pregnancy need to adopt a family planning method soon after delivery.

Contraceptive Knowledge and Practice

Contraceptive knowledge in Trinidad and Tobago is high: In 1987, 97 percent of all women and 99 percent of those currently in a union knew of at least one modern contraceptive method. Among women overall, 63 percent have ever used any method and 60 percent have ever used a modern method. Of women currently in a union, 83 percent have used any method and 79 percent have used a modern one. The pill has been the most widely used method (42 percent overall), followed by the condom and withdrawal (37 percent and 23 percent, respectively).

In 1987, 53 percent of women in a union were currently practicing contraception and 44 percent were currently using a modern method. Women 20–44 years of age are the most likely of those in a union to be using a modern contraceptive method: Approximately 45 percent are doing so, compared with 30 percent among both women 15–19 and women 45–49.

The pill and the condom are the most commonly used methods, with 14 percent and 12 percent of women in a union currently using them; sterilization is the next most widely used method, with eight percent of women in a union protected by that method. Female sterilization is much more prevalent among older women; in fact, among those 35–49, it is the most popular form of contraception, with 15–18 percent of those in a union relying on it.

Current use of contraceptives is strongly related to education. Among women in the highest education category, 68 percent practice contraception, compared with 41 percent of those with less than a primary education. In addition, while female sterilization is the most popular method among those with the least amount of schooling (14 percent), the pill is the most widely used among those in the highest education group (16 percent).

Twenty-eight percent of women 15–49 who were ever in a union began practicing contraception before having any children; 25 percent began using contraceptives after they had had one child, 12 percent after they had had two, seven percent after they had had three and nine percent after they had had four or more children. Current age is associated with whether women began using contraceptives before having a child: Over 40 percent of women 15–24 first practiced contraception prior to having a child, compared with only 17 percent of women 40–44 and 10 percent of those 45–49.

Almost one-third of the women sampled discontinued use of a contraceptive method in the five years before the survey. Health concerns were the major reason users of the pill, the IUD and injectables gave for temporary or permanent discontinuation (43 percent, 51 percent and 56 percent of those who had discontinued use, respectively). Among those who stopped using vaginal methods, rhythm or withdrawal, the primary reason given was method failure. Most of those who stopped using the condom did so because they wanted to become pregnant.

Overall, 42 percent of women in a union who are not currently practicing contraception say they intend to use a method in the future: Twenty-eight percent expect to begin practicing contraception within the next year, six percent say they will start in a year or more and seven percent are unsure about when they will begin use. Forty-six percent of the women not practicing contraception do not intend to use a method in the future, and 12 percent are unsure. The pill and female sterilization are the methods most favored for future use.

Among women who say they have heard of a given contraceptive method, most know of at least one source where that method can be obtained. The primary sources named were government health centers, clinics run by the Family Planning Association of Trinidad and Tobago (FPATT), private sources (doctors, hospitals and nursing homes) and pharmacies. Current users were asked where they received their method. Most users of the pill, vaginal methods or the condom had gone to a pharmacy for the method, while most users of the IUD and female sterilization had visited a health center. Satisfaction with all the primary sources is high—89 percent of those using government centers or FPATT clinics reported no problems, as did 94 percent of users of private sources or pharmacies.

About half of women in a union who were able to name a method of contraception had discussed family planning with their partner in the year before the survey. The authors of the Trinidad and Tobago DHS consider that figure to be surprisingly low, given that knowledge about contraception is nearly universal and that over 80 percent of women in a union had ever practiced contraception. Women younger than 30 are more likely to have discussed family planning with their partners than are those 30 and older (59–63 percent vs. 16–51 percent). Only 30 percent of women 40–44 and 16 percent of women 45–49 had talked to their partners about contraception in the previous year.

Overall, the ideal family size of women in Trinidad and Tobago is relatively low. The mean ideal number of children among all women aged 15–49 is 2.9. Women with a primary education or less, however, have an average ideal family size of 3.1–3.6, while those with a partial secondary education or more report an average ideal family size of 2.7. The ideal number of children does not vary according to rural or urban residence.

The proportion of women at various parities who want no more children is consistent with the data on ideal family size. Overall, 47 percent of women in a union do not wish to have more children and 55 percent of those who have two children say they want no more children. Among those with three or more children, 64–70 percent do not want any more children. Most women consider themselves to have had enough children by the time they are 30 years old. Among those 30–49, 59–84 percent do not want any more children.

One-third of women in a union are said to be in need of family planning because they are not practicing contraception and they either want no more children or they want to delay their next birth. Of those women, 41 percent say they intend to practice contraception in the future.

Maternal and Child Health

According to the 1987 DHS, the provision of maternal and child health care services (by means of prenatal, postnatal and child health clinics) is a primary concern of the Trinidad and Tobago Ministry of Health. Indeed, infant and childhood mortality has decreased greatly since the early 1970s. In the period 1972–1976, infant mortality was 47 per 1,000 births, but it dropped by 44 percent to 26 per 1,000 births in 1982–1987. Childhood mortality decreased by 52 percent between those two periods, from 7.1 to 3.4 deaths per 1,000 children.

Consistent with the low infant mortality rate is a low prevalence of diarrhea among children younger than five. Only six percent of children had had an episode of diarrhea (defined as three or more loose or runny stools in a day) in the two weeks preceding the survey, and only two percent had had an episode in the previous 24 hours. Of the children who had had diarrheal episodes, 66 percent received oral rehydration therapy (ORT). Almost 90 percent of mothers with children under five years of age knew about ORT.

Prenatal care was provided to pregnant women almost universally in the five years preceding the survey. Although the DHS did not gather information on when care provided women with prenatal care. Eighty-four percent of women who gave birth in that period received prenatal care from a doctor, and 14 percent received it from a trained nurse-midwife. Tetanus immunization injections were given during pregnancy to 31 percent of the women who gave birth in the five years before the survey.

Despite the fact that cervical cancer is the second leading cause of cancer deaths among women in Trinidad and Tobago, only 31 percent of women ever in a union have ever had a Pap smear and only 11 percent had had a Pap smear in the past year. Urban women are almost twice as likely as rural women to have ever had a smear (41 percent vs. 22 percent), and women with a complete secondary education are much more likely than those with a partial secondary education or less to have had one (57 percent vs. 23–29 percent). Although the risk of cervical cancer increases with age, the utilization of Pap smears does not: Only 15 percent of women 35–39, 11 percent of women 40–44 and 10 percent of those 45–49 had had a Pap smear in the year preceding the survey.—*P. Rind*

Reference

1. K. Heath, D. D. Costa-Martinez and A. R. Sheon, *Trinidad and Tobago Demographic and Health Survey 1987*, Family Planning Association of Trinidad and Tobago, Port-of-Spain, and Institute for Resource Development/Westinghouse, Columbia, Md., 1988.

Toward Family Planning in the 1990s

(Continued from page 135)

generar mayor demanda por los servicios de planificación familiar, incrementar el acceso a los servicios (incluyendo el mayor involucramiento del sector privado), aumentar la accesibilidad de los servicios, fomentar la mayor participación de la comunidad, y desarrollar las bases para un personal idóneo y un financiamiento suficiente. Además, un número de asuntos administrativos crecerá en importancia, tales como la eliminación de las deficiencias logísticas, la mejora de la supervisión, el aumento de la eficiencia de los sistemas administrativos de información, el mayor énfasis en los resultados de proyectos de investigación y evaluación, y el perfeccionamiento del adiestramiento.

Résumé

L'expansion des services de planification familiale au cours des années 90 ne nécessitera pas uniquement des fonds supplémentaires mais aussi des approches différentes et une meilleure planification et gestion du programme. Après examen et évaluation, le Fonds des Nations unies pour les activités en matière de population (FNUAP) conclut que certaines stratégies générales sont nécessaires au succès du programme. Ces stratégies comprennent renforcer l'engagement politique, générer une plus grande demande pour les services de planification familiale, rendre les services plus accessibles (notamment en faisant participer davantage le secteur privé), améliorer l'acceptabilité des services, accroître la participation communautaire et développer des bases adéquates de ressources humaines et financières. De plus, un certain nombre de questions administratives deviendront plus importantes et, à cet égard, il faudra s'efforcer d'éliminer les lacunes logistiques, d'améliorer la supervision et la formation, d'accroître l'efficacité des systèmes de gestion de l'information et d'insister davantage sur la recherche et l'évaluation.

INTERNATIONAL FAMILY PLANNING PERSPECTIVES

Index to Volume 15, 1989

Subject Index

Abortion

UN Convention Causing Commotion, Update, p. 51.

Africa

African AIDS Epidemic May Have Only Moderate Impact on Population Growth, Digest, p. 43.

AIDS Education Is Found to Improve Condom Use by Prostitutes in Kenya, Digest, p. 40.

AIDS Fear and Knowledge in Botswana, Update, p. 83.

AIDS Hits Côte d'Ivoire, Update, p. 125.

Botswana Makes Big Progress, Update, p. 2.

Changing Patterns of Fertility and the Supply of Contraceptive Commodities, see **Contraceptive Practice.**

Effect of Counseling on Sterilization Acceptance by High-Parity Women in Nigeria, The, A. E. Omu, S. S. Weir, B. Janowitz, D. L. Covington, P. R. Lamptey and N. N. Burton, p. 66.

Fertility, Infant Mortality Are Very High in World's Least Developed Nations, see **Fertility: Planning and Effects.**

HIV in One African Hospital, Update, p. 82.

In Mali, Childbearing Is Frequent and Modern Contraceptive Use Uncommon, Digest, p. 72

In Morocco, Fertility Is Declining and Method Use Rising, DHS Finds, Digest, p. 109.

Male Knowledge, Use and Attitudes Regarding Family Planning in Burkina Faso, T. McGinn, A. Bamba and M. Balma, p. 84.

Modern Contraception Is Little Known, Rarely Used in Ondo State, Nigeria, Digest, p. 155.

Nigeria Under Pressure, Update, p. 3.

Nigeria's Next Census, Update, p. 126.

Only 11 Percent of Senegalese Women Practice Birth Control, Digest, p. 39.

Percentage of Older Citizens Growing Rapidly in Many Developing Countries, see **Population Policy and Research.**

Reproductive Risks and Intentions in Six Countries in Sub-Saharan Africa, S. R. Radloff, B. H. Seligman, J. R. Seltzer and R. M. Cornelius, p. 136.

Risk Factors for AIDS, see **Sexually Transmitted Diseases.**

Roots of Kenya's High Fertility, Update, p. 50.

State of a Continent: Demography in Africa, The, Book Review of: *The State of African Demography*, E. van de Walle, M. D. Sala-Diakanda and P.O. Ohadike, eds. Rev. by J. C. Caldwell, p. 79.

Traditional Attitudes, Fear Are Barriers to Female Sterilization in Zaire, Digest, p. 149.

Use of Periodic Abstinence and Knowledge of the Fertile Period in 12 Developing Countries, see **Contraceptive Practice.**

Women's Status, Education and Family Formation in Sub-Saharan Africa, Comment, M. M. Kritz and D. T. Gurak, p. 100.

World Strategies Against AIDS, Update, p. 2.

Asia

Assembly-Line Sterilization, see **Sterilization.**

Bangladeshi Midwives Need Training to Counter Dangerous Birthing Practices, Digest, p. 112.

Breastfeeding Has Increased Among Urban Women in Indonesia, Digest, p. 109.

Breastfeeding Trends in the Philippines, Update, p. 2.

Calcutta Success Story, Update, p. 83.

Changing Patterns of Fertility and the Supply of Contraceptive Commodities, see **Contraceptive Practice.**

Dual Fertility Trends in Malaysia's Multiethnic Society, R. Leete, p. 58.

Fertility Decline in Nepal? Update, p. 126.

Fertility, Infant Mortality Are Very High in World's Least Developed Nations, see **Fertility: Planning and Effects.**

Gandhi Addresses the World on Family Planning, Document, p. 106.

Gynecologic Disorders Common, Treatment Lacking in Rural India, Bangladesh, Digest, p. 152.

Health Care in Rural India, Update, p. 82.

Indonesian Fertility Rate Falls As Age at Marriage, Modern Method Use Rise, Digest, p. 153.

In Search of New Terminology, Update, p. 125.

Iran's Rate of Population Growth Is One of World's Highest, Digest, p. 41.

Japan Leads World in Assistance, Update, p. 2.

Korea Cracks Replacement Level, Update, p. 51.

Percentage of Older Citizens Growing Rapidly in Many Developing Countries, see **Population Policy and Research.**

Schooling and Fertility in Pakistan, Update, p. 3.

Singapore Muslims Reach Low Fertility, Update, p. 125.

Sons Preferred in Pakistan, Update, p. 125.

Sri Lanka Family Size Declines; Estates Show Greatest Health Needs, Digest, p. 113.

Stalls in the Fertility Decline in Costa Rica and South Korea, see **Fertility: Planning and Effects.**

Sterilization Regret in Sri Lanka: A Retrospective Study, D. Hapugalle, B. Janowitz, S. Weir, D. L. Covington, L. Wilkens and C. Aluvihare, p. 22.

Use of Periodic Abstinence and Knowledge of the Fertile Period in 12 Developing Countries, see **Contraceptive Practice.**

Barrier Methods

Men Favor Condoms with Spermicide, Update, p. 3.

Breastfeeding

Breastfeeding Has Increased Among Urban Women in Indonesia, see **Asia.**

Breastfeeding Protects Infant Health, see **Maternal and Child Health.**

Breastfeeding Trends in the Philippines, see **Asia.**

Progestin-Only Pill and Breastfeeding, see **Oral Contraceptives.**

Contraceptive Practice

AIDS Education Is Found to Improve Condom Use by Prostitutes in Kenya, see **Africa.**

Changing Patterns of Fertility and the Supply of Contraceptive Commodities, P.J. Donaldson and S. Ghosh, p. 52.

Dual Fertility Trends in Malaysia's Multiethnic Society, see **Asia.**

Indonesia Fertility Rate Falls As Age at Marriage, Modern Method Use Rise, see **Asia.**

In Mali, Childbearing Is Frequent and Modern Contraceptive Use Uncommon, see **Africa.**

In Morocco, Fertility Is Declining and Method Use Rising, DHS Finds, see **Africa.**

In Trinidad and Tobago, Fertility Rates Are Low and Method Use Is High, see **Latin America and the Caribbean.**

Investigating the Social Context of Fertility and Family Planning: A Qualitative Study in Peru, see **Latin America and the Caribbean.**

Male Knowledge, Use and Attitudes Regarding Family Planning in Burkina Faso, see **Africa.**

Moderate Fertility Rates and Levels of Method Use Mark Ecuador DHS, see **Latin America and the Caribbean.**

Modern Contraception Is Little Known, Rarely Used in Ondo State, Nigeria, see **Africa.**

Only 11 Percent of Senegalese Women Practice Birth Control, see **Africa.**

Paraguay: Few Changes Found in FP Practice or Fertility in Past 10 Years, see **Latin America and Caribbean.**

Salvadoran Women Start Method Use Late, Rely Heavily on Sterilization, see **Latin America and the Caribbean.**

Sri Lanka Family Size Declines; Estates Show Greatest Health Needs, see **Asia.**

Use of Periodic Abstinence and Knowledge of the Fertile Period in 12 Developing Countries, A. R. Sheon and C. Stanton, p. 29.

Contraceptive Research

Back to the Drawing Board? Update, p. 2.

New Male Method Enters Testing Phase, Update, p. 126.

Fertility: Planning and Effects

Adolescent Fertility in Latin America and the Caribbean: Examining the Problem and the Solutions, see **Latin America and the Caribbean.**

Botswana Makes Big Progress, see **Africa.**

Dual Fertility Trends in Malaysia's Multiethnic Society, see **Asia.**

Fertility Decline in Nepal? see **Asia.**

Fertility, Infant Mortality Are Very High in World's Least Developed Nations, Digest, p. 76.

Indonesian Fertility Rate Falls As Age at Marriage, Modern Method Use Rise, see **Asia.**

In Mali, Childbearing Is Frequent and Modern Contraceptive Use Uncommon, see **Africa.**

In Morocco, Fertility Is Declining and Method Use Rising, DHS Finds, see **Africa.**

In Trinidad and Tobago, Fertility Rates Are Low and Method Use Is High, see **Latin America and the Caribbean.**

Investigating the Social Context of Fertility and Family Planning: A Qualitative Study in Peru, see **Latin America and the Caribbean.**

Iran's Rate of Population Growth Is One of World's Highest, see **Asia.**

Moderate Fertility Rates and Levels of Method Use Mark Ecuador DHS, see **Latin America and the Caribbean.**

Modern Contraception Is Little Known, Rarely Used in Ondo State, Nigeria, see **Africa.**

Overall Fertility Impact of New Contraceptive Methods May Be Limited, Digest, p. 150.

Paraguay: Few Changes Found in FP Practice or Fertility in Past 10 Years, see **Latin America and Caribbean.**

Reproductive Risks and Intentions in Six Countries in Sub-Saharan Africa, see **Africa.**

Sri Lanka Family Size Declines; Estates Show Greatest Health Needs, see **Asia.**

Stalls in the Fertility Decline in Costa Rica and South Korea, M. Gendell, p. 15.

Underdevelopment, Not Islam, Key to High Fertility in Muslim Nations, Digest, p. 108.

Women's Education and Fertility: A Decade of Change in Four Latin American Countries, see **Latin America and the Caribbean.**

Hormonal Implants and Injections

Dissolvable Implant Tested, Update, p. 51.

Microspheres Pass Early Test, Update, p. 51.

NORPLANT Gets Preliminary OK, Update, p. 3.

Latin America and the Caribbean

Adolescent Fertility in Latin America and the Caribbean: Examining the Problem and the Solutions, L. Remez, p. 144.

After Four Years, One in 100 Female Sterilizations Fail, Brazil Study Finds, see **Sterilization.**

Brazil's Singular AIDS Patterns, Update, p. 50.

Changing Patterns of Fertility and the Supply of Contraceptive Commodities, see **Contraceptive Practice.**

Fertility, Infant Mortality Are Very High in World's Least Developed Nations, see **Fertility: Planning and Effects.**

High-Parity Women Are Found to Have Elevated Risk of Cervical Cancer, see **Maternal and Child Health.**

In Trinidad and Tobago, Fertility Rates Are Low and Method Use Is High, Digest, p. 157.

Investigating the Social Context of Fertility and Family Planning: A Qualitative Study in Peru, A.L. Fort, p. 88.

Marketing Vasectomy in Mexico, Update, p. 126.

MEXFAM Community Doctors Project: An Innovative Service Delivery Strategy, The, see **Programs: Evaluation and Funding.**

Moderate Fertility Rates and Levels of Method Use Mark Ecuador DHS, Digest, p. 73.

Paraguay: Few Changes Found in FP Practice or Fertility in Past 10 Years, Digest, p. 42.

Percentage of Older Citizens Growing Rapidly in Many Developing Countries, see **Population Policy and Research.**

Salvadoran Women Start Method Use Late, Rely Heavily on Sterilization, Digest, p. 77.

Stalls in the Fertility Decline in Costa Rica and South Korea, see **Fertility: Planning and Effects.**

Use of Periodic Abstinence and Knowledge of the Fertile Period in 12 Developing Countries, see **Contraceptive Practice.**

Women's Education and Fertility: A Decade of Change in Four Latin American Countries, M. B. Weinberger, C. Lloyd and A. K. Blanc, p. 4.

Maternal and Child Health

Bangladeshi Midwives Need Training to Counter Dangerous Birthing Practices, see **Asia.**

Breastfeeding Protects Infant Health, Update, p. 51.

Curing Diarrhea Won't Stop Malnutrition, Update, p. 82.

Gynecologic Disorders Common, Treatment Lacking in Rural India, Bangladesh, see **Asia.**

High-Parity Women Are Found to Have Elevated Risk of Cervical Cancer, Digest, p. 154.

Human Papillomavirus and Cancer, Update, p. 126.

In Morocco, Fertility Is Declining and Method Use Rising, DHS Finds, see **Africa.**

One-Third of Infants Born to HIV-Positive Mothers Face Illness or Death, see **Sexually Transmitted Diseases.**

Sisterhood Is Powerful, Update, p. 83.

Sri Lanka Family Size Declines; Estates Show Greatest Health Needs, see **Asia.**

Oral Contraceptives

Cholesterol Levels May Be Altered by Hormones in Some Combined Pills, p. 44.

Long-Term Pill Users Shown to Be at Higher Risk of Breast Cancer, Digest, p. 115.

Progestin-Only Pill and Breastfeeding, Digest, p. 126.

Weighing the Evidence on the Pill and Breast Cancer, Special Report, J.H. Johnson, p. 35.

Population Policy and Research

African AIDS Epidemic May Have Only Moderate Impact on Population Growth, see **Africa.**

Asking the Unaskable Around the World, Update, p. 50.

Development Key to Longer Life, Update, p. 50.

DHS Takes the Next Step, Update, p. 3.

Feminist Critique Critiqued, A, Book Review of: *Reproductive Rights and Wrongs: The Global Politics of Population Control and Contraceptive Choice,* Betsy Hartman. Rev. by R. Cook and A. Leonard, p. 47.

Guide Through the Population Jungle, A, Book Review of: *Perspectives on Development and Population Growth in the Third World,* by O. G. Smith. Rev. by W. Mertens. p. 119.

Iran's Rate of Population Growth Is One of World's Highest, see **Asia.**

Nigeria Under Pressure, see **Africa.**

Percentage of Older Citizens Growing Rapidly in Many Developing Countries, Digest, p. 45.

State of a Continent: Demography in Africa, The, Book Review of: *The State of African Demography,* see **Africa.**

Toward Family Planning in the 1990s: A Review and Assessment, A. Keller, P. Severyns, A. Khan and N. Dodd, p. 127.

World Growing Ever Larger, Faster, A, Update, p. 50.

Programs: Evaluation and Funding

MEXFAM Community Doctors Project: An Innovative Service Delivery Strategy, The, Special Report, H. Arango, p. 96.

Writing for Those Who Cannot Read, Update, p. 126.

Sexually Transmitted Diseases

African AIDS Epidemic May Have Only Moderate Impact on Population Growth, see **Africa.**

AIDS Education Is Found to Improve Condom Use by Prostitutes in Kenya, see **Africa.**

AIDS Hits Côte d'Ivoire, see **Africa.**

Assembly-Line Sterilization, see **Sterilization.**

Brazil's Singular AIDS Patterns, see **Latin America and the Caribbean.**

Genital Ulcers and HIV Infection Risk, Update, p. 125.

HIV in One African Hospital, see **Africa.**

Human Papillomavirus Is Linked to Cervical Cancer in Latin America, Digest, p. 117.

Infectious Cervical Cancer, Update, p. 82.

New Lab Test for HIV, Update, p. 3.

No AIDS Vaccine on the Horizon? Update, p. 3.

One-Third of Infants Born to HIV-Positive Mothers Face Illness or Death, Digest, p. 117.

Risk Factors for AIDS, Update, p. 83.

World Strategies Against AIDS, see **Africa.**

Status of Women

Schooling and Fertility in Pakistan, see **Asia.**

Women's Status, Education and Family Formation in Sub-Saharan Africa, see **Africa.**

Sterilization

After Four Years, One in 100 Female Sterilizations Fail, Brazil Study Finds, Digest, p. 75.

Assembly-Line Sterilization, Update, p. 82.

Effect of Counseling on Sterilization Acceptance by High-Parity Women in Nigeria, The, see **Africa.**

Marketing Vasectomy in Mexico, see **Latin America and the Caribbean.**

Sterilization Regret in Sri Lanka: A Retrospective Study, see **Asia.**

Teenagers

Adolescent Fertility in Latin America and the Caribbean: Assessing the Problem and the Solutions, see **Latin America and the Caribbean.**

Author Index

Aluvihare, C., see Hapugalle, D.

Arango, H., The MEXFAM Community Doctors Project: An Innovative Service Delivery Strategy, Special Report, p. 96.

Balma, M., see McGinn, T.

Bamba, A., see McGinn, T.

Blanc, A. K., see Weinberger, M. B.

Burton, N. N., see Omu, A. E.

Caldwell, J. C., The State of a Continent: Demography in Africa, Book Review, p. 79.

Cook, R., and Leonard, A., A Feminist Critique Critiqued, Book Review, p. 47.

Cornelius, R. M., see Radloff, S. R.

Covington, D. L., see Hapugalle, D., and Omu, A. E.

Dodd, N., see Keller, A.

Donaldson, P. J., and Ghosh, S., Changing Patterns of Fertility and the Supply of Contraceptive Commodities, p. 52.

Fort, A. L., Investigating the Social Context of Fertility and Family Planning: A Qualitative Study in Peru, p. 88.

Gendell, M., Stalls in the Fertility Decline in Costa Rica and South Korea, p. 15.

Ghosh, S., see Donaldson, P. J.

Gurak, D. T., see Kritz, M. M.

Hapugalle, D., Janowitz, B., Weir, S., Covington, D. L., Wilkens, L., and Aluvihare, C., Sterilization Regret in Sri Lanka: A Retrospective Study, p. 22.

Janowitz, B., see Hapugalle, D., and Omu, A. E.

Johnson, J. H., Weighing the Evidence on the Pill and Breast Cancer, Special Report, p. 35.

Keller, A., Severyns, P., Khan, A., and Dodd, N., Toward Family Planning in the 1990s: A Review and Assessment, p. 127.

Khan, A., see Keller, A.

Kritz, M. M., and Gurak, D. T., Women's Status, Education and Family Formation in Sub-Saharan Africa, Comment, p. 100.

Lamptey, P. R., see Omu, A. E.

Leete, R., Dual Fertility Trends in Malaysia's Multiethnic Society, p. 58.

Leonard, A., see Cook, R.

Lloyd, C., see Weinberger, M. B.

McGinn, T., Bamba, A., and Balma, M., Male Knowledge, Use and Attitudes Regarding Family Planning in Burkina Faso, p. 84.

Mertens, W., A Guide Through the Population Jungle, Book Review, p. 121.

Omu, A.E., Weir, S. S., Janowitz, B., Covington, D. L., Lamptey, P. R., and Burton, N.N., The Effect of Counseling on Sterilization Acceptance by High-Parity Women in Nigeria, p. 66.

Radloff, S. R., Seligman, B. H., Seltzer, J. R., and Cornelius, R. M., Reproductive Risks and Intentions in Six Countries in Sub-Saharan Africa, p. 136.

Remez, L., Adolescent Fertility in Latin America and the Caribbean: Examining the Problem and the Solutions, p. 144.

Seligman, B. H., see Radloff, S.R.

Seltzer, J. R., see Radloff, S. R.

Severyns, P., see Keller, A.

Sheon, A. R., and Stanton, C., Use of Periodic Abstinence and Knowledge of the Fertile Period in 12 Developing Countries, p. 29.

Stanton, C., see Sheon, A.R.

Weinberger, M. B., Lloyd, C., and Blanc, A. K., Women's Education and Fertility: A Decade of Change in Four Latin American Countries, p. 4.

Weir, S., see Hapugalle, D.

Weir, S. S., see Omu, A. E.

Wilkens, L., see Hapugalle, D.

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Failure Rates for the Ovulation Method

Who Forgets to Take the Pill?
Family Planning Among Poor Women in Rio

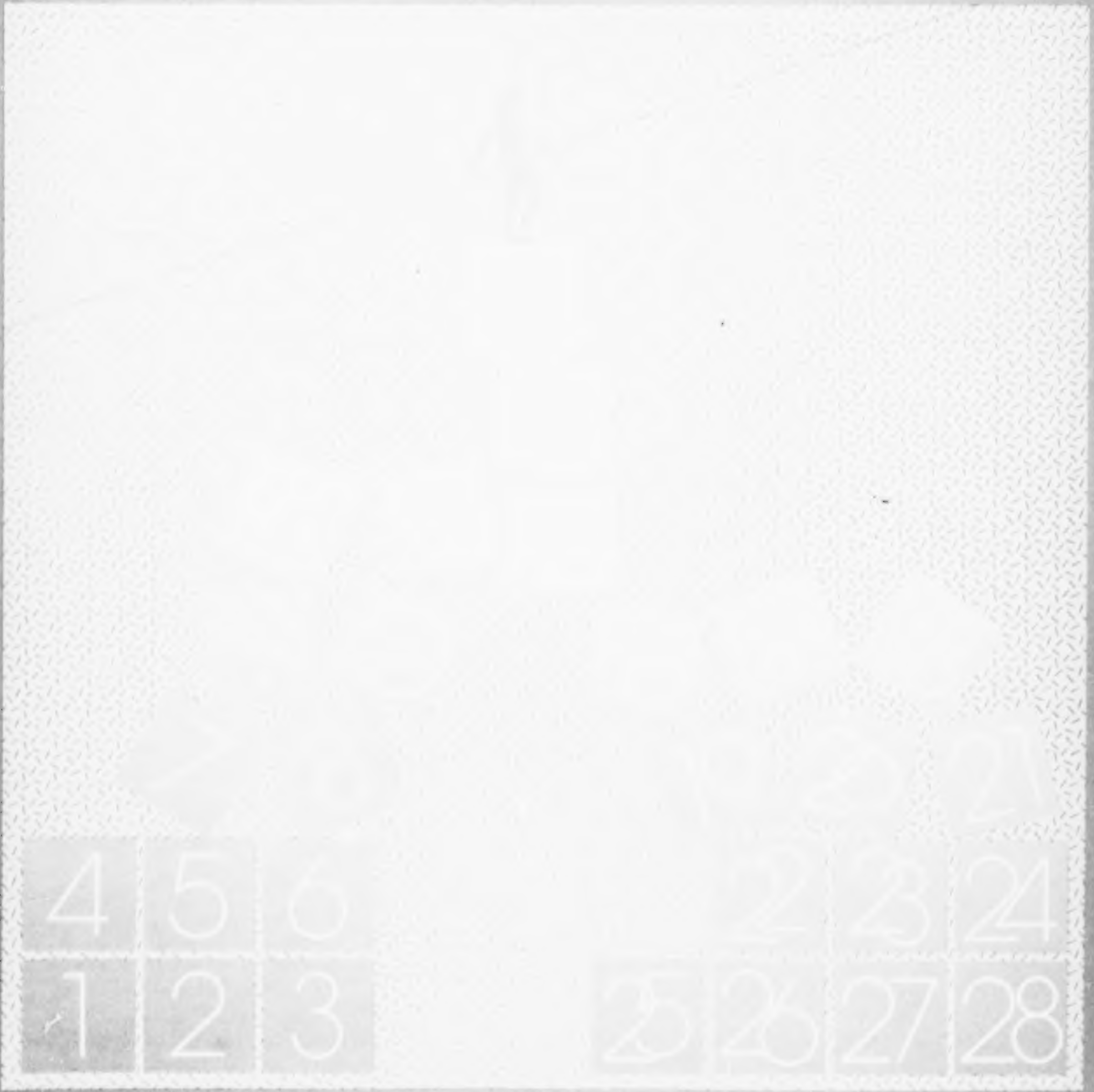

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Table of Contents **Page**

Update 2

Articles

Contraceptive Failure of the Ovulation Method of Periodic Abstinence — James Trussell and Laurence Grummer-Strawn 5
Family Planning Among Low-Income Women in Rio de Janeiro: 1984–1985 — Sarah Hawker Costa, Ignez Ramos Martin, Sylvia Regina da Silva Freitas and Cristiane Schuch Pinto 16
Who Forgets to Take the Pill? The Thai Experience — Siriwan Siriboon, Chanpen Saengtienchai and John Knodel 23

Digest

Kenya: Tubal Ligation Seems to Be Gaining Acceptance Among Women and Men 29
Women in Botswana Use the Pill to Space Births, but Want Large Families 30
Developing Country Pill Users Experience Small Rise in Blood Pressure 32
Haitian Fertility May Have Risen in 1980s; Contraceptive Use Remains Low 33
Rates of Expulsion No Higher When IUD Is Inserted During Lactation 35
IUD Use Is Common, but Use of Hormonal, Barrier Methods Rare in Vietnam 36
Mexican Fertility Falls as Female Sterilization Becomes More Popular 36

Books in Review

A Unique Response To Population Growth — Susan H. Cochrane 39
Note to Authors 4

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UPDATE

The Pill and the Risk of Cancer

Oral contraceptives appear no more likely to cause cancer among women in developing countries than they are to do so among women in developed countries, according to the results of an eight-country World Health Organization (WHO) study.[1] The WHO analysis showed, as other case-control studies had previously, that pill use has a protective effect against the development of endometrial and ovarian cancer, and that this effect is about the same in developed and developing countries. The overall risk of breast cancer with pill use was not significantly elevated; however, the relative risk in developing countries (1.2) was statistically significant, while the risk in developed countries (1.1) was not. In addition, the overall risk of cervical cancer in pill users was slightly elevated (1.2), but because of the number of confounding factors, the WHO could draw no definitive conclusions. There appeared to be no association between oral contraceptive use and liver or gallbladder cancer.

[1] D. B. Thomas, "OCs and Cancer Risk: Comparing Results from Developing and Developed Countries," *Outlook*, Vol. 7, No. 4, 1989, p. 2.

Economic Benefits of Breastfeeding

When an obstetrician at Manila's Dr. José Fabella Memorial Hospital, where about 100 births take place every day, decided to change normal postdelivery procedures, his aim was to encourage breastfeeding and reduce the incidence of infection.[1] Rather than crowd the infants together in the nursery, where cross-infection was common, the hospital staff began to bed the infants with their mothers and encourage the women to breastfeed the babies immediately. Not only has the approach proved successful, with the rate of infection among newborns far lower than before, but it has also produced unexpectedly substantial savings: The milk kitchen (where about 2,400 feeding bottles had been prepared daily) has been closed, about 90 nurses have been reassigned to other departments in the hospital and expenditures on bottles and on dried milk have been eliminated. As a result, the hospital is now saving about U.S. $300,000 annually—which represents about eight percent of its total operating budget.

[1] D. Morley, "Philippines: Bedding In," *Lancet*, I:101, 1990.

Tuberculosis and HIV

Tuberculosis, which has remained an important cause of death in the developing world, appears to be combining with human immunodeficiency virus (HIV) to further strain the health care system.[1] A review of recent research on HIV and tuberculosis concludes that in many developing countries, a high proportion of HIV-infected patients have tuberculosis, and that this combination of infections is seen most often in urban areas. Perhaps as a result, many of the African countries that have the highest levels of HIV infection also have reported a recent upsurge in cases of tuberculosis. The authors also note that tuberculosis cases in HIV-infected patients are more often centered in the heart, the peritoneum or throughout the body, making the disease much more difficult to diagnose.

[1] A. D. Harries, "Tuberculosis and Human Immunodeficiency Virus Infection in Developing Countries," *Lancet*, I:387, 1990.

Pill Use and Breastfeeding

Progestin-only oral contraceptives do not have a negative effect on breastfeeding, either for the mother or for her infant, the results of a recent study confirm.[1] Among a group of about 500 breastfeeding women, those who were using a pill containing levonorgestrel were no more likely to discontinue breastfeeding or to report a decrease in milk production than were those using nonhormonal contraceptive methods. In addition, there were no sizable differences between the two groups in the rate of infant growth or in weight gain. In fact, the only substantial difference between groups was that the women relying on nonhormonal methods were substantially more likely to have become pregnant than were those using the progestin-only pill. Given that combined pills have been shown to decrease milk production, the investigators conclude that "it is reasonable to promote progestin-only contraceptives as the formulation of choice for breastfeeding women who wish to use hormonal contraception."

[1] M. F. McCann et al., "The Effects of a Progestin-Only Oral Contraceptive (Levonorgestrel 0.03 mg) on Breastfeeding," *Contraception*, **40**:635, 1989.

Nova-T Effective for Up to Five Years

The Nova-T copper IUD remains highly effective for a full five years of use, according to the results of a recent prospective study of the device.[1] Among a group of 201 women who began using the IUD in 1981 and 1982, only six experienced an accidental pregnancy over the course of the next five years; all of the pregnancies occurred during the first two years of use. The Pearl index pregnancy rate at the end of five years was 1.2, and the net pregnancy rate was 3.2 per 100 users after five years. Most expulsions and removals (primarily because of infection) occurred among women under age 25, leading the investigators to comment that for women older than 25 who are in a stable relationship, the Nova-T represents "a most effective contraceptive method."

[1] P. Fugere, "Five Years Experience of Intrauterine Contraception with the Nova-T," *Contraception*, **41**:1, 1990.

Implant Insertion-Site Problems Rare

Only about one percent of some 2,674 users of NORPLANT®, the first widely used contraceptive implant, either developed an infection at the spot the device was inserted or expelled the hormone-filled capsules from the insertion site during the first year of use, according to a multicountry analysis of insertion-site complications.[1] Another five percent of implant acceptors experienced a local reaction, such as pain, itching or a rash. Two-thirds of the cases of infection occurred within 60 days of insertion; however, two-thirds of the expulsions took place two months or more after insertion. There were also wide variations in the rate of insertion-site complications both within and between countries.

[1] S. L. Klavon and G. S. Grubb, "Insertion Site Complications During the First Year of NORPLANT® Use," *Contraception*, 41:27, 1990.

Tarnish No Problem for IUDs

About one of every 10 Copper T-380 IUDs has reportedly been found to be tarnished while still in its packaging, but according to a recent report, clinicians around the world have no reason for concern.[1] The slight discoloration of the copper wiring—the result of a natural oxidation process—does not mean that the sterile packaging has been breached, and it will not impair the IUD's effectiveness. According to The Population Council, which developed the device, both tarnished and untarnished Copper Ts were used in their clinical trials, and there was no sign that tarnished IUDs were any less effective than untarnished devices.

[1] "Tarnished Copper IUDs Still Safe and Effective," *Network*, Vol. 10, No. 4, 1989, p. 12.

Maternal HIV Transmission: A Clue?

Infants born prematurely to a group of women infected with the human immunodeficiency virus (HIV) were far more likely to become HIV-infected themselves than were those born close to or at term (60 percent vs. 22 percent).[1] Fifty-three percent of full-term infants born to women with a low level of immune reaction to gp120 (a protein found in the envelope of the virus) developed HIV infection, compared with none of those born to women with medium resistance to the protein and seven percent of those born to women with high resistance. No such association was seen among infants born prematurely, however. They note that the antibody to the protein may afford infants some protection against HIV infection during the last trimester of pregnancy and that obstetric approaches intended to maximize the likelihood of full-term delivery may help to prevent mother-infant HIV transmission.

[1] J. J. G[illegible]dert et al., "Mother-to-Infant Transmission of Human Immunodeficiency Virus Type 1: Association with Prematurity or Low Anti-gp120," *Lancet*, II:1351, 1989

What Birth Attendants Don't Know

Traditional birth attendants (TBAs) continue to be an important source of health care in Kenya. For example, even though many pregnant women living in a district near the capital, Mombasa, visit the nearby modern hospital for prenatal care, three-quarters of all pregnant women in the area deliver at home with the help of a TBA.[1] A study of 36 local TBAs revealed that together, the TBAs had performed 116 deliveries in the preceding month, almost three times the number performed at the hospital. Forty-two percent of the TBAs admitted that they knew nothing about the provision of routine prenatal care. Although all recognized that anemia or hemorrhage were high-risk conditions for pregnant women, fewer than half said they would refer a woman with such problems to the hospital. Three-quarters generally used a razor blade to cut the cord after delivery (generally a used, nonsterile razor blade). The authors report that because most of the TBAs had a "poor grasp of time," they tended to wait far too long to refer women having a difficult delivery to the hospital for emergency care; the result was that many such women died after admission to the hospital, further convincing the TBAs that it was better not to send patients to the hospital. The study findings will be used to formulate a training program for TBAs that will emphasize the importance of prenatal and postnatal care, the maintenance of sterility during and after delivery and the need for quick referral of complicated deliveries.

[1] M. M. Solomon and K. O. Rogo, "A Needs Assessment Study of Traditional Birth Attendants in Rural Kenya," *International Journal of Gynecology and Obstetrics*, 30:329, 1989.

Egypt's Success Against Diarrhea

In 1983, Egypt launched an extensive program to reduce diarrheal disease among infants and children. An evaluation has concluded that the program has been a success: Oral rehydration salts are now widely available, physicians usually prescribe oral rehydration therapy and parents generally use it correctly.[1] For example, in 1980, 27 percent of mothers surveyed had ever used oral rehydration salts and 12 percent knew how to mix them correctly; by 1987–1988, these proportions had risen to 66 percent and 88 percent, respectively. The impact of the program can be seen in mortality trends: The rate of infant mortality from diarrheal disease fell by four percent between 1970 and 1977 and by almost eight percent between 1978 and 1982, but dropped by 20 percent between 1983 and 1987; meanwhile, infant mortality from other causes fell only slightly. Similar trends can be seen for childhood mortality as well. The investigators observe that despite the program's apparent success, about 38,000 Egyptian infants and children died of diarrheal disease in 1987; they estimate, however, that if mortality rates had remained unchanged from the levels observed in 1982, the number of infant and child deaths from diarrheal disease in 1987 would have exceeded 100,000.

[1] M. El-Rafie et al., "Effect of Diarrheal Disease Control on Infant and Childhood Mortality in Egypt: Report from the National Control of Diarrheal Diseases Project," *Lancet*, I:334, 1990.

Pregnancy and Death in Bangladesh

Homicide or suicide during pregnancy and complications of illegal induced abortion are among the major causes of death among women of reproductive age in Bangladesh, according to an 11-year study of mortality in Matlab *thana*.[1] Overall, almost one in five deaths among reproductive-age women (including one in three deaths among 15–19-year-olds) were related to accident or violence, and more than half of them occurred during pregnancy. Sixty percent of these maternal deaths were caused by complications from induced abortion, and most of the remainder were either suicides (17 percent) or homicides (eight percent). Furthermore, almost three-quarters of all maternal deaths among unmarried women were related to suicide or induced abortion. Unmarried 15–19-year-olds were 10 times as likely as married 15–19-year-olds to have died from an abortion. In addition, only 29 percent of married women and 12 percent of unmarried women who died as a result of abortion were taken to a hospital before they died.

[1] V. Fauveau and T. Blanchet, "Deaths from Injuries and Induced Abortion Among Rural Bangladeshi Women," *Social Science in Medicine*, 29:1121, 1989.

Note to Authors

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Manuscripts should be typed double-spaced, with all pages numbered and with a title page that includes the names and affiliations (at the time of the work reported) of all authors. Submissions should run no more than 30–35 pages, with no more than 7–8 tables; only one copy need be sent. Manuscripts should include a summary of up to one page in length.

Each table and chart should be on a separate page. Authors should check previous issues of *International Family Planning Perspectives* to gain an idea of how tables are to be styled. Authors must supply data points for all line graphs and charts; final art work will be done by the journal's staff.

Nota para Autores

International Family Planning Perspectives es una revista trimestral que publica monografías sobre el mundo en desarrollo destinadas a asistir a profesionales en las esferas de fecundidad y planificación familiar, salud maternoinfantil y política de población. Invitamos a investigadores y responsables de políticas y programas de todo el mundo a que presenten artículos sobre temas tales como práctica e investigación en materia de anticonceptivos; crecimiento demográfico; niveles, tendencias y determinantes de la fecundidad; espaciamento de los hijos; políticas oficiales y cuestiones jurídicas que afecten la planificación familiar y la fecundidad; aplicación, elaboración y evaluación de programas de planificación familiar; actividades de información, instrucción y comunicación; enfermedades transmitidas sexualmente y salud reproductiva y maternoinfantil. Los originales deben enviarse a la dirección que figura más abajo, debiendo constar en ellos filiación completa, domicilio postal, teléfono y, de ser posible, numero de Fax del remitente.

Los originales pueden ser en español, francés o inglés. Serán aceptados en la inteligencia de que son inéditos y no están siendo considerados por ninguna otra publicación. El personal de edición examinará todos los trabajos presentados y, de hallarlos interesantes, los hará evaluar por otros especialistas sin divulgar el nombre del autor. No se devolverán los originales rechazados. Los que se acepten serán revisados en la medida necesaria para conformarlos al estilo de la revista. Los autores tendrán dos oportunidades de examinar sus monografías revisadas y deberán ceder los derechos a la revista.

Algunos artículos se seleccionarán para las ediciones anuales española, *Perspectivas Internacionales de Planificación Familiar*, y francesa, *Perspectives Internationales sur le Planning Familial*.

Los originales deberán presentarse dactilografiados a doble espacio. Las páginas deberán ir numeradas, debiendo figurar en la primera nombre y filiación (al momento de escribirse el trabajo) completos de todos los autores. Los artículos no podrán exceder las 35 páginas ni incluir más de ocho cuadros. No hace falta enviar sino un ejemplar. Los originales deberán ir acompañados de un resumen de hasta una página.

Cada tabla o gráfico deberá ir en hoja aparte. Conviene que los autores consulten números anteriores de *International Family Planning Perspectives* para hacerse una idea del respectivo formato. Deberán suministrar también todas las cifras y datos necesarios para cada gráfico o cuadro. La revista se encargara del diseño gráfico.

Note aux auteurs

La revue trimestrielle *International Family Planning Perspectives* publie des articles présentant des résultats de recherche sur les pays en développement et destinés à éclairer les spécialistes de la fécondité, de la planification familiale ainsi que de la santé maternelle et infantile et des politiques démographiques. La rédaction invite tout chercheur, dirigeant ou administrateur de programme du monde entier à soumettre des articles sur les sujets suivants: pratique contraceptive et recherche dans le domaine de la contraception; croissance démographique; niveaux, tendances et facteurs déterminants de la fécondité; espacement des naissances; questions juridiques et d'ordre public influant sur la planification familiale et la procréation; administration, élaboration et évaluation de programmes de planification familiale; activités relatives à l'information, l'éducation et la communication; maladies sexuellement transmissibles; hygiène sexuelle et comportement reproducteur; et santé maternelle et infantile.

Les auteurs doivent adresser les manuscrits à l'adresse ci-dessous et mentionner les références complètes, adresse, numéro de téléphone et numéro de télécopieur (si possible) de la personne avec qui nous devons communiquer. Les manuscrits peuvent être rédigé en anglais, en français ou en espagnol et ne seront acceptés qu'à la condition qu'ils n'aient été soumis à aucune autre publication, ni déjà publiés. Tous les articles sont édités par la rédaction et s'ils sont jugés intéressants, présenté, à titre anonyme, à l'appréciation de spécialistes. Les manuscrits non publiés ne seront pas renvoyés à leur(s) auteur(s). Une fois acceptés, les manuscrits seront éventuellement édités afin de les adapter au style et présentation propres à la revue. Les auteurs auront ensuite, à deux reprises, l'occasion de revoir leur article. Ils devront céder les droits d'auteur à la revue.

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Tous les manuscrits doivent être préparés de la manière suivante: Ils doivent être dactylographiés en double interligne, avec un maximum de 30–35 pages et chaque feuillet doit être soigneusement paginé.

La première page doit fournir les noms de tous les auteurs ainsi que leurs références (au moment où travaux ou recherches ont été effectués). Ils ne doivent pas comporter plus de 7–8 tableaux et doivent inclure un résumé ne dépassant pas une page. L'auteur ne doit soumettre qu'un seul exemplaire.

Tableaux et graphiques devront figurer chacun sur un feuillet séparé. Les auteurs sont priés de consulter les numéros précédents de la revue afin de voir comment les tableaux doivent être présentés. Ils devront également fournir les points de données pour tous diagrammes et graphiques.

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Contraceptive Failure of the Ovulation Method of Periodic Abstinence

Of all contraceptive methods, variants of periodic abstinence are probably the least forgiving of imperfect use; the pill is probably the most forgiving of imperfect use and barrier methods and withdrawal should fall between these extremes.

By James Trussell and Laurence Grummer-Strawn

Summary

Previously published estimates of probabilities of method and user failure for all contraceptive methods suffer from a serious methodological error and are biased downward, with the extent of bias unknown. Data from a World Health Organization clinical trial of the ovulation method of periodic abstinence were used to provide the first correctly calculated measures of method and user efficacy and to determine the characteristics that distinguish women who consciously take risks from those who do not. Probabilities of pregnancy during the first year are 3.1 percent during perfect use (method failure) and 86.4 percent during imperfect use (user failure). Thus, if used perfectly, the ovulation method is very effective. However, it is extremely unforgiving of imperfect use. Because perfect compliance is difficult for many couples who desire intercourse when it is forbidden by ovulation method rules, and because the risk of pregnancy during imperfect use is so great, the ovulation method cannot be considered an ideal contraceptive method for the typical couple, who are likely to be less compliant than couples who volunteer for a clinical trial. The probability of an accidental pregnancy is greatest when any of the three most serious rules—no intercourse during mucus days, within three days after the day of peak fecundity or during times of stress—are broken. Those who have a poor attitude toward the rules are more likely to take risks, including serious risks. Those who get away with taking a risk (i.e., do not get pregnant) are very likely to take risks again. Because breaking the most serious rules entails a 28 percent risk of pregnancy per cycle, those likely to take risks should be counseled about the probable consequences.

Introduction

To make truly informed choices about contraception, couples need to know not only the efficacy of methods as they are actually used and misused by real couples (the only firm measure of contraceptive failure now available), but also the efficacy of methods when used correctly and consistently and when used imperfectly. The difference between failure rates during imperfect and perfect use provides couples with a measure of how forgiving of imperfect use a particular method is likely to be. The proportion of months (or menstrual cycles) characterized by perfect use (or the proportion of users who always use a method perfectly) provides couples with a measure of how difficult a method is to use correctly and consistently.

A previous comprehensive review of the literature on contraceptive failure identified several areas in which research is critically needed.[1] Foremost among these is proper measurement of the risk of method and user failure for all contraceptives. This article takes a first step toward that goal by providing estimates of method and user efficacy for the ovulation method of periodic abstinence. In addition, it provides the first information on variables associated with risk-taking behavior among users of this method.

The ovulation method is based on the discovery that changes in the characteristics of cervical mucus closely mirror hormonal changes during the menstrual cycle. Before 1975, very little information was available on a woman's ability to detect and interpret changes in her cervical mucus. Thus, the World Health Organization (WHO) conducted a clinical trial in centers in five countries (New Zealand, India, Ireland, the Philippines and El Salvador) to determine the proportion of women able to detect these changes, the factors affecting this ability and the efficacy of this approach to fertility limitation.

The results of that investigation, published in a series of five articles, have significantly enhanced our understanding of these questions.[2] The first striking finding was that 94 percent of the surveyed women (who were drawn from a wide variety of social, economic and cultural backgrounds) were able to detect the change in cervical mucus that signals the onset of the fecund period. After the first teaching cycle, 91 percent of the participants were rated as having a good or excellent understanding of the method.[3] After successful completion of a three-cycle teaching phase, 725 women entered a 13-cycle efficacy phase and collectively contributed 7,514 cycles of observation. The 13-cycle life-table pregnancy rate was 19.6 percent.

Unfortunately, the investigators published method efficacy rates computed by the standard procedure, which, we contend, is flawed. These calculations showed Pearl indices[*] of 2.8 and 18.9 for method failure and user failure, respectively, with one additional pregnancy (an index of 0.5) that was not unambiguously attributable to either method or user error.[4] As part of their analysis, the investigators examined

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James Trussell is professor of economics and public affairs and Laurence Grummer-Strawn is a research student, both with the Office of Population Research, Princeton University. Germán Rodriguez, Jennifer Strickler and Barbera Vaughan gave advice throughout this project; P. F. A. Van Look, T. M. M. Farley and A. Pinol at the World Health Organization provided the data and generous advice; and Jane Menken, J. M. Spieler, Felicia Stewart and Judith Tilton offered helpful comments on an earlier draft.

[*] The Pearl index is obtained by dividing unintentional pregnancies by the number of woman-years of exposure to the risk of unintended pregnancy. It is usually then multiplied by 100. The defects of this index as a measure of contraceptive failure are discussed at length elsewhere (see: reference 1). The basic problem is that failure rates decline with duration of use, either because those prone to fail do so early, leaving a group increasingly unlikely to become accidentally pregnant, or because women (or couples) become better users with more experience. Consequently, Pearl indices from different studies are not comparable when average durations of exposure vary across studies.

psychosexual aspects of the ovulation method, including satisfaction of women and their partners and the prevalence of rule breaking.[5] The only characteristic of women examined in these analyses was their country of residence. Thus, this rich data set can be analyzed further to yield information that is both entirely new and clinically useful to counselors and couples considering the ovulation method. Specifically, characteristics that distinguish those who consciously break the rules from those who do not can be identified.

The major problem in drawing inferences from the experience of users of a contraceptive method occurs because women (or couples) select their own method, with their choice governed by a variety of factors such as cost, convenience and safety.[6] When data are drawn from a nationally representative sample of women, as is the case for the National Survey of Family Growth, results concerning contraceptive failure pertain to the population of women who choose to use each method. Self-selection of the method creates uncertainty, however, about what the experience of women would be if they were randomly assigned to a method. Our suspicion is that women who choose to use spermicides, for example, are inherently less successful users of any contraceptive than are women who choose to use the pill. Therefore, observed spermicide failure rates probably underestimate efficacy that would be achieved if users were chosen at random.

Efficacy data from clinical trials are yet another step removed from the population for which one would wish to make inferences, because the sample of users of a method in a trial is not even representative of the larger population of women who choose to use that method. Nevertheless, most efficacy information is drawn from clinical trials, simply because the data are rich and relatively plentiful.

We will not directly address the intractable issue of sample selection in this article. Our own results necessarily will pertain only to those women who satisfied the criteria for selection into the WHO trial—regularly ovulating women of proven fecundity who had not previously used the ovulation method and who were willing volunteers. However, we reason that the effect of selection on efficacy operates predominantly through consistency and correctness of use and consequently that selection does not significantly affect measures of inherent method efficacy (when computed correctly). Therefore, our estimate of the probability of method failure during perfect use should generalize to the population of potential users. Our estimate of the overall probability of failure during imperfect use depends on the particular combination of ways in which women in the trial broke the ovulation method rules, but our estimates for specific types of rule breaking should generalize beyond the sample.

Measuring User and Method Failure

Many investigators have recognized the importance of distinguishing between contraceptive failure attributable to user error and failure attributable to the inadequacy of the method itself. By convention, all pregnancies that occur during a month (or menstrual cycle) in which a method either is not used at every act of intercourse or is used improperly are labeled user failures. Only pregnancies that occur during a month (or cycle) during which a method is used perfectly are classified as method failures; perfect use does not imply that the method did not fail, only that the method was used consistently and correctly according to a well-specified set of rules. We have no objection to this convention (indeed, it is necessary), but it must be understood that not all pregnancies classified as user failures will in fact be user failures. For example, if in one month (or cycle) a method is not used or is used incorrectly during two acts of intercourse but is used correctly during eight other acts, a resulting pregnancy cannot unambiguously be attributed to user error instead of method failure.

The standard procedure is to compute separate method and user failure rates (pregnancies divided by exposure). In this procedure, all exposure from perfect and imperfect use is included in the denominator of both method and user failure rates. According to this convention, method and user failures are treated as two of many possible causes of method discontinuation. The sum of all cause-specific discontinuation rates is the overall or total discontinuation rate, and the sum of method and user failure rates is the overall or total failure rate. The common misinterpretation is that the resulting method rate yields information about the inherent efficacy of the method. Inherent method efficacy can be measured only when the numerator (method failures) is assessed in relation to the proper risk set (exposure only when the method is used perfectly). Method failure rates computed by the standard procedure confound inherent method efficacy with the proportion of exposure that is characterized by perfect use.

The following example illustrates how misleading the conventional interpretation can be. Suppose that we decide to evaluate an innovative contraceptive regime that is claimed not only to prevent pregnancy but also to enhance health. It requires a woman to stand on her head and drink orange juice during each act of intercourse. We conduct a clinical trial, which yields the amazing result that the method failure rate is zero percent, although common sense would dictate that the method is absolutely worthless (except insofar as perfect use would drastically reduce coital frequency). However, unbeknownst to us because we followed standard procedure and did not inquire, the sole reason for this zero percent failure rate is that no woman ever achieved perfect use in any cycle. By convention, no pregnancies can be classified as method failures if all exposure is characterized by imperfect use. Such reasoning leads to the conclusion that it makes no sense to treat method and user failures as causes of discontinuation. To be treated as a cause, an event must be a possible outcome for those in the risk set.[*] In an IUD trial, expulsion, removal for pain or bleeding and accidental pregnancy are proper competing risks; in contrast, user vs. method failures make no more sense as competing risks than do black vs. white pregnancies or teenage vs. adult pregnancies, because each of these alternative events is conditional on a separate risk set.

Conventionally computed method failure rates have definitely generated controversy. For example, the lowest Pearl index for periodic abstinence in the literature was obtained in a study of 282 women in Tonga.[7] The investigators discarded 50 pregnancies judged to have resulted from improper use and then calculated an index of 1.4 failures per 100 woman-years of exposure to risk. This study sparked a lively debate. John Marshall[8] and Roger Rochat[9] argued that it would be misleading to exclude the 50 pregnancies attributed to user error, so they added them to the numerator, thereby obtaining a Pearl index of 25.4. Henry Mosley stressed that the index of 1.4 was a theoretical measure of failure, while the index of 25.4 was a

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[*] For example, death rates by cause add to the overall death rate, because all persons are assumed to be at risk of dying from any cause. Clearly, one might argue that all persons are not exposed to every cause of death, even when analysis is age-specific and gender-specific. For example, a woman is not at risk of maternal mortality if she is sterile (or not having intercourse). However, such examples illustrate problems with the cause-of-death methodology rather than provide support for the standard procedure of computing method failure rates.

Table 1. Summary of the ovulation method of fertility regulation

Approximate cycle day	Phase	How identified	Intercourse allowed?
1–5	Menstruation	Bleeding	No
6–9	Dry days	Absence of cervical mucus	On alternate nights only
10	Fecund period begins	Onset of sticky mucus secretion	No
16	Peak fecund day	Last day on which slippery mucus (resembling raw egg white) is observed	No
19	Fecund period ends	Evening of the third day after the peak day	No
20–29	Safe period	From evening of fourth day after peak day until onset of bleeding	Yes

Note: The cycle begins on the first day of menstruation. Menses is considered unsafe for intercourse because it is impossible to identify cervical mucus in the presence of bleeding and women with short cycles may enter the fecund period during the last days of bleeding. In the early (prefecund) dry days, cervical mucus is absent, but intercourse is allowed only on alternate nights (to minimize confusion between semen and cervical mucus). The fecund period begins on the first day on which cervical mucus is observed. When cervical mucus first appears, it is "sticky" and actually signals an infecund period for the woman. But, because sperm can survive for several days, intercourse is forbidden from the onset of sticky mucus. When the cervical mucus changes consistency by becoming "slippery" and resembling raw egg white, the woman has entered the most fertile phase of her cycle. The day of peak fecundity is identified retrospectively as the last day on which slippery mucus is observed; it usually, but not always, coincides with the day of maximum slippery mucus. The peak day marks the last day of the follicular (preovulatory) phase of the cycle; the luteal (postovulatory) phase begins on the following day. Intercourse is not allowed from the first day of sticky mucus until the evening of the fourth day past the peak day. The remainder of the cycle is considered safe. However, because stress can affect the quality of mucus, intercourse is forbidden during periods of stress. In the typical cycle of 29 days, intercourse would be allowed on about 12 nights (see: WHO, 1983, op. cit. [reference 2]). Checking cervical mucus involves several steps: First, the woman ascertains whether she feels a sensation of wetness or dryness. After obtaining mucus directly from the vaginal opening using a finger or toilet paper, she focuses primarily on its quality (lubrication, elasticity, wetness and tackiness) and secondarily on its color and quantity (see: D. Guren and N. Gillette, *The Ovulation Method: Cycles of Fertility*, Ovulation Method Teachers Association, 1984, Portland, Oreg.).

measure of failure during actual use.[10] No one pointed out the real error in the calculation yielding the index of 1.4.

This error is quite widespread; method (or theoretical) failure rates have almost always been calculated incorrectly, because investigators remove only the pregnancies attributable to improper use from the analysis, although they retain all exposure. For example, in our review of 13 clinical trials of periodic abstinence, "method only" calculations (all incorrect) were found in 10, including the WHO analysis of ovulation method efficacy.[11]

The analytical error is the failure to realize that, by convention, method failures can occur only when the method is being used perfectly. Logically, as discussed above, method failures can occur during both imperfect and perfect use. During perfect use, however, the only failures that can occur are method failures, and method failure rates can be measured only when the method is used perfectly. The difference between the failure rate during imperfect use and the failure rate during perfect use provides a measure of the contribution of imperfect use to the likelihood of failure. Because the experimental design of most studies (the WHO study being an important exception) probes for imperfect use only when there is a pregnancy, method failure rates cannot be computed even if the investigators recognize the error in the standard procedure. As a consequence of this computational error, failure rates that are reported as method failure rates in the literature are too low, with the extent of the downward bias unknowable. For the same reason, user failure rates reported in the literature are also too low. Whether conventionally computed method failure rates are more or less severely biased than user failure rates depends on the proportion of total exposure characterized by perfect use.

Only three studies have calculated method failure rates correctly.[12] Nevertheless, none of these investigators identified their rates as "method" failure rates, and none of their publications informed subsequent work on method vs. user failure; furthermore, all estimates of failure were based on Pearl indices rather than on life tables, which control for duration of use. In principle, one could calculate method failure in two ways. First, one could split the sample into those who never used the method imperfectly and those who did so at least once. The resulting rates would pertain to perfect and imperfect users. This approach was taken by Eleanor Mears and N. W. Please and by A. P. K. John in analyses of the failure of spermicides and condoms, respectively.[13] Alternatively, the exposure (and failures) during periods of perfect use by the imperfect users could be combined with the exposure (and failures) of the perfect users to create measures of failure during perfect and imperfect use. Hilliard Dubrow and Katherine Kuder constructed rates in this manner in an analysis of failure of spermicides and the diaphragm.[14] Method failure rates yielded by the two approaches should be similar, provided that cycles of perfect use contributed by imperfect users are characterized by levels of coital frequency and underlying fecundity similar to those of perfect users. User failure rates will be higher if the second approach is used, because the exposure pertains solely to imperfect use.

Because previous investigators have not probed for rule breaking at times when an accidental pregnancy did not take place, our understanding of the covariates of user and method failure is quite limited. Existing analyses are of dubious value, because their examinations of the covariates of "method" failure have measured method failure according to the standard procedure. For example, a reanalysis of worldwide data on the contraceptive sponge claims that there is no difference in method failure rates between parous and nulliparous women.[15] In contrast, analysis of the U.S. data reveals overall first-year failure probabilities of 28.3 percent among parous women and 13.9 percent among nulliparous women; no difference by parity was found for diaphragm users.[16]

Data

WHO invited five centers with experience in teaching the ovulation method to participate in a clinical trial. The centers were located in Auckland (New Zealand), Bangalore (India), Dublin (Ireland), Manila (the Philippines) and San Miguel (El Salvador). To participate in the trial, women had to be younger than 39, to have menstrual cycles of 23–35 days, to have had at least one live birth (or term stillbirth) within the preceding five years in the present union and to be cohabiting. Women were not eligible if they were lactating, if they had used hormonal contraception during any of the three cycles prior to admission into the study or if they had used the ovulation method previously. Participants had to agree to keep the necessary records and not to use any other method of contraception during the efficacy phase of the study.

Of 869 women admitted to a teaching phase of 3–6 cycles, 765 (88 percent) successfully completed it, and 725 entered the efficacy phase. (The remaining 40 withdrew for a variety of reasons; for example, because they wanted to get pregnant, were dissatisfied with the method or moved away.) The ovulation method rules, summarized in Table 1, forbid intercourse dur-

Table 2. Percentage of women using the ovulation method and percentage of cycles of use, by various demographic and method-related characteristics

Characteristic	%
WOMEN (N=725)	
Residence	
Auckland, New Zealand	14.1
Bangalore, India	26.3
Dublin, Ireland	26.9
Manila, Philippines	15.9
San Miguel, El Salvador	16.8
Age at admission (mean=29.8)	
<28	31.8
28–34	48.3
35–38	19.9
Perfect user (always obeys rules)	
Yes	54.1
No	45.9
Education	
Illiterate	12.4
<6 years	16.7
6–12 years	49.1
>12 years	21.8
Education of partner	
Illiterate	8.0
<6 years	17.7
6–12 years	39.4
>12 years	34.9
Occupation	
Housewife	83.2
Other	16.8
Occupation of partner	
Prof., tech., admin., clerical	32.7
Sales or service	12.6
Farming or skilled labor	45.1
Unskilled, student or unemployed	9.7
Number of previous pregnancies	
1–2	31.3
3–4	41.4
≥5	27.3
Attitude of partner*	
Fully cooperative	31.9
Attitude of partner (continued)	
Other	68.1
Partner completes charting*	
Always	8.6
Occasionally	25.1
Never	66.3
Couple took risk†	
Sometimes	38.0
Never	62.0
Couple took serious risk‡	
Sometimes	25.1
Never	74.9
CYCLES (N=7,484)	
Coital frequency per cycle (mean=4.88§)	
1–2	8.5
3–4	14.4
5–6	12.9
≥7	13.9
Unknown	50.2
Couple wants more children**	49.3
Woman prefers higher coital frequency	15.5
Partner prefers higher coital frequency	32.4
Attitude toward rules is excellent	30.2
Woman's satisfaction with method is excellent	21.7
Partner's satisfaction with method is excellent	21.7
Perfect use (obeys rules during cycle)	89.3
Couple took risk†	
In cycle	8.7
In previous cycle††	6.8
Two cycles previous‡‡	6.2
In both prior cycles§§	2.6
Couple took serious risk‡	
In cycle	4.1
In previous cycle*†	2.7
Two cycles previous*‡	2.3
In both prior cycles*§	0.7

*At graduation from teaching phase.

†Risk-taking defined as conscious breaking of any ovulation method rule. Rules are listed in Table 3.

‡Serious-risk taking defined as conscious breaking of the three most serious ovulation method rules forbidding intercourse during mucus/wet days, within three days after peak and during periods of stress.

§Mean for all cycles in which coital frequency is known.

**Not defined for women, because some women give different answers across cycles.

††When denominator is confined to those with two or more cycles, percent=7.6.

‡‡When denominator is confined to those with three or more cycles, percent=7.6.

§§When denominator is confined to those with three or more cycles, percent=3.2.

*†When denominator is confined to those with two or more cycles, percent=2.9.

*‡When denominator is confined to those with three or more cycles, percent=2.8.

*§When denominator is confined to those with three or more cycles, percent=0.9.

ing menses, on alternate "dry" days before the start of the fecund period (to minimize confusion between semen and cervical mucus), during the fecund period itself and during periods of stress. The fecund period begins with the onset of mucus secretion, peaks on the last day on which "fecund" mucus (resembling raw egg white) is recognized and ends on the evening of the third day past the peak day. Intercourse can be resumed on the fourth night past the peak day. Overall, intercourse is forbidden on roughly half the days in each cycle.

Separate data collection forms were used for each menstrual cycle, with each subject recording fecund days, days of bleeding and days of intercourse. Subjects were asked to record all acts of intercourse, but they were required to record, at a minimum, the last act before the onset of the fecund period, all acts during the fecund period, the first act after the end of the fecund period and whether all acts during the cycle were reported. From the form and a monthly meeting during which a teacher carefully questioned each subject, the teacher transcribed cycle details and judged compliance, comprehension and attitude. A total of 7,514 cycles were recorded for the 725 women. Copies of all forms were checked for consistency and completeness at WHO headquarters in Geneva, where an analysis file in machine-readable format was created.

One might object to our using the data from only the efficacy phase on the grounds that efficacy will be overstated because those most prone to fail would be eliminated in the teaching phase. We would agree with this criticism if we were interested in the overall proportion who fail during the first year of use. However, we reason that this selection process would operate primarily by weeding out imperfect users. Because the purpose of our analysis is to control for perfect vs. imperfect use (as well as for frequency of intercourse and age), we would not expect selection to be a factor. Moreover, the results published by WHO do not show any difference in the overall failure rates for the two phases.[17] There were 45 pregnancies in 2,701 cycles in the teaching phase (probability of failure = 0.0166 ± 0.0048) and 130 pregnancies in 7,514 cycles in the efficacy phase (probability of failure = 0.0173 ± 0.0029). Hence, the anticipated selection effect is not manifest in these data. Nevertheless, the primary reason that we have not included data from the teaching phase is practical rather than empirical or theoretical—they were not available to us.

In our analyses, we discarded 30 cycles during which, according to the women's reports, no intercourse had occurred; we retained 156 cycles about which there was insufficient information to determine whether intercourse had occurred. One might object that those who do not have intercourse in a cycle are nevertheless perfect users of the ovulation method. However, women simply are not exposed to the risk of contraceptive failure unless they have intercourse, so cycles characterized by no exposure to the risk of pregnancy should be removed.[18] Moreover, all qualitative results would be identical regardless of the inclusion or exclusion of these cases, and the quantitative impact of including the 30 cycles or excluding the 156 cycles is trivial. In all, 7,484 cycles were included in the analyses. We imputed perfect vs. imperfect use in a small number of cases for which data were missing, and we imputed coital frequency in a small number of cycles for which it was possible to do so.* The few cases for which data were missing on other variables were combined with the reference category for that variable. Consequently, effects estimates for these variables will be slightly attenuated.

Correlates of Failure

Our objective in the first of our analyses is to examine the characteristics of users of the ovulation method who experience a contraceptive failure. Our hypothesis is that three characteristics—perfect vs. imperfect use of the method, coital frequency and the underlying fecundity of the couple—are the dominant factors affecting contraceptive failure because they are the proximate biological determinants.[19] To study these characteristics, we use multivariate life tables or hazard models.†

The primary characteristic of interest is dichotomous: being a perfect or an imperfect user. We create two sets of models, each operationalizing this concept in a different way. The most straightforward is to classify as perfect users only those couples who always use the ovulation method perfectly. In the other procedure, couples are categorized as either perfect or imperfect users in each cycle; hence the cycle, not the couple, is characterized by either perfect or imperfect use. In the latter procedure, perfect use is a time-varying covariate. For example, a couple with perfect use in cycles 1 and 3 and imperfect use in cycles 2 and 4 would contribute cycles at durations 1 and 3 in the perfect-use life table and at durations 2 and 4 in the imperfect-use life table.

The second most important covariate is frequency of intercourse. Increased coital frequency raises the risk of contraceptive failure because exposure to the risk of failure is greater. Not only is there increased opportunity for imperfect use (at least with coitus-dependent methods), but also the risk of method failure rises with the number of occasions on which the method could fail. If effects of coital frequency are not controlled in studies of coitus-dependent methods (particularly periodic abstinence), method failure rates are likely to be low merely because low coital frequency is a good way to achieve perfect use. Imperfect users of the ovulation method are likely to have higher coital frequency on average because they have intercourse during the (roughly) half of the cycle when the ovulation method rules do not allow it as well as during the period when it is allowed. One of our goals is to separate the effects of imperfect use and coital frequency on method failure. Since coital frequency is not the same in each cycle, it is entered into the analyses as a time-varying covariate. However, complete information on all acts of coitus was provided for only half the cycles. Thus, when we categorized this variable, we were forced to include a category for unknown frequency.

A third important covariate is the underlying fecundity of the couple. Of course, fecundity is not observable. Fortunately, only women of proven fecundity were admitted to the WHO trial, so that the sample is, by design, relatively homogeneous on this dimension. We employ the age of the woman as a proxy for fecundity, because it will reflect the declining biological capacity to conceive as women age.[20]

We would expect that a model with these three covariates would adequately fit the data. However, a rich variety of other covariates, including socioeconomic characteristics and attitudinal measures, is available. We explore models with these additional characteristics to test our hypothesis that their importance in previous research reflects only the lack of data on the relevant biological proximate determinants. For example, the lower observed contraceptive failure rates among women who seek to prevent further pregnancies rather than to delay their next wanted pregnancy may simply reflect their greater consistency of use of a method and lower coital frequency.

Definitions of variables and their sample frequencies are displayed in Table 2. We provide frequencies for the sample of women when the information is woman-specific and for the sample of cycles when the information is cycle-specific. Age, coital frequency and number of previous pregnancies were coded as continuous variables by WHO (means for these variables are shown); for purposes of analysis, we categorized these variables. All other variables were categorized by WHO.

Preliminary life tables show a first-year failure probability of 3.1 percent among those who always used the ovulation method perfectly and of 38.4 percent among those who used the method imperfectly during at least one cycle. The probability of failure during the first year of perfect use (including the perfect-use cycles of the imperfect users) is 3.2 percent, which, as expected, is virtually identical to the result for those who always used the ovulation method perfectly. The probability of failure during the first year of imperfect use is 85.0 percent; this is a much higher probability (as expected) than that found for those who used the ovulation method imperfectly at least once (38.4 percent), because in the latter case, the likelihood of failure is reduced substantially by cycles of perfect use. This probability of failure is extremely high, almost as high as the proportion (about 89 percent) who conceive within one year of trying to become pregnant.[21] The ovulation method is very unforgiving of imperfect use.

Given these preliminary results, we confine attention henceforth to analyses in which perfect vs. imperfect use was defined for each cycle and not for each couple. Further analysis reveals that duration of use does not add significant explanatory power to these models. Hence, all cycles of use can be combined and a simple Pearl index (events divided by exposure) suffices for our purposes here. However, we emphasize that duration is important when the covariate perfect vs. imperfect use is omitted from the model, with failure rates declining as duration increases. Therefore, even these data should be analyzed with life-table procedures unless one controls for consistency and correctness of use. This warning would apply even more strongly if the data were not limited to only 13 cycles of exposure.

Table 3 (page 10) shows Pearl indices for various definitions of imperfect use. The overall probability of pregnancy is 1.7 percent per cycle—0.2 percent during cycles characterized by perfect use and 14.2 percent during those characterized by imperfect use. These failure probabilities per cycle can be cumulated to yield a 20.4 percent probability of failing during the first year; the estimated first-year probabilities of failing during perfect (3.1 percent) and imperfect (86.4 percent) use are nearly identical to the life-table probabilities (3.2 percent and 85.0 percent, respectively), because, as discussed previously, there is no significant variation in per-cycle rates by duration of use.

In Table 3, the first section under the heading "disobeyed rules" shows the risk of pregnancy when particular rules are broken, regardless of whether other rules

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*Details concerning imputations are available from the first author.

†The number of failures, conditional on exposure, is assumed to be Poisson distributed with mean $N_i \exp(X_i\beta)$, where N_i is the exposure in group i, X_i is a vector of characteristics for group i and β is the associated vector of regression coefficients.

Table 3. Number of pregnancies, number of cycles and percent failing during use of the ovulation method, by adherence to rules

Adherence to rules	Pregnancies	Cycles	% per cycle	% per year*	Confidence interval†
TOTAL	130	7,484	1.7	20.4	17.2–23.4
Obeyed rules	16	6,683	0.2	3.1	1.6–4.5
Disobeyed rules	114	801	14.2	86.4	80.5–90.6
Broke this rule and perhaps others					
Consecutive dry days	13	218	6.0	55.0	31.1–71.1
Mucus/wet days	62	178	34.8	99.6	98.6–99.9
Three days after peak	47	209	22.5	96.4	90.9–98.6
Genital contact on wet days	9	106	8.5	68.4	34.3–85.5
Bleeding/spotting	9	232	3.9	40.2	16.7–57.5
Situations of stress	23	41	56.1	100.0	99.9–100.0
Broke only this rule					
Consecutive dry days	5	155	3.2	34.7	5.6–55.3
Mucus/wet days	28	91	30.8	99.2	95.5–99.9
Three days after peak	26	128	20.3	94.8	84.5–98.4
Genital contact on wet days	1	75	1.3	16.0	0.0–40.6
Bleeding/spotting	2	157	1.3	15.4	0.0–33.0
Situations of stress	3	8	37.5	99.8	68.6–100.0‡
Broke any of these rules (and perhaps others)					
Wet days, after peak, or stress	104	375	27.7	98.5	96.8–99.4
All others	10	426	2.3	26.6	11.2–39.4
Wet days, after peak, or consecutive dry	105	539	19.9	94.0	89.9-96.6
All others	9	262	3.4	36.5	14.9–53.0
Wet days, after peak, consecutive dry, or stress	109	548	19.9	94.4	90.5–96.8
All others	5	253	2.0	22.9	3.3–38.7

*Calculated as $100x(1–[1–P]^{13})$, where P is the probability per cycle (# pregnancies/# cycles).

†Annual 95% confidence interval computed from cycle confidence interval based on normal approximation.

‡Annual 95% confidence interval computed from cycle confidence interval based on exact binomial.

are broken simultaneously. The second section displays the risk when only one rule is broken. These results suggest that having intercourse is particularly risky on mucus days, during the three days after the peak day or during periods of stress; in the remainder of this article, prohibitions against having intercourse under those conditions will be referred to as the three most serious rules. Among those whose imperfect use consists of breaking one or more of these three rules in every cycle, 98.5 percent would become pregnant in the first year. In contrast, having intercourse during the menstrual period or having "genital contact" during mucus days carries far less risk; having intercourse on consecutive dry days incurs a risk intermediate between the very high risk and lower risk behaviors.

It is surprising that having intercourse during times of stress incurs such a high risk. Stress presumably disrupts the link between changes in the quality of cervical mucus and ovulation. A plausible hypothesis is that stress delays ovulation but not the estimated peak fecund day, which is identified retrospectively as the last day on which slippery mucus is observed. Hence, when intercourse is timed according to the ovulation method rules to resume on or soon after the evening of the fourth day past the estimated peak, the timing actually coincides with the period of maximum risk of conception. Further research is needed to discover whether having intercourse during periods of stress is indeed as risky as our results imply and, if so, why.

In Figure 1, we use results from Table 3 to simulate the probability of contraceptive failure within one year, depending on the number of cycles in which the ovulation method is used imperfectly. For illustrative purposes, we focus on three types of imperfect use: serious imperfect use (breaking one or more of the three most serious rules), which incurs a risk of 27.7 percent per cycle; less serious imperfect use (breaking rules other than the three most serious ones), which incurs a risk of 2.3 percent per cycle; and typical imperfect use (in which the mix of broken rules mirrors that in the WHO trial), which incurs a per-cycle risk of 14.2 percent. When the only imperfect use is of the less serious variety, the probability of accidental pregnancy per year rises almost linearly from 5.1 percent (if only one use cycle is imperfect) to 26.6 percent (if all 13 cycles are characterized by imperfect use). For the other two varieties of imperfect use, the corresponding curves rise much more rapidly when the number of imperfect-use cycles is small than when the number is already large, because the per-cycle risks are so large. Stated in a different way, with only two cycles of serious imperfect use (49.1 percent) or with only four cycles of typical imperfect use (47 percent), the yearly probability of failure reaches about one-half what it is after 13 cycles of serious imperfect use or typical imperfect use.

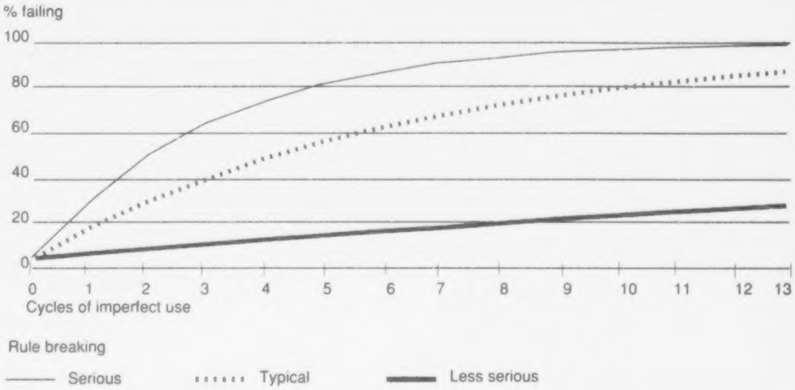
Our next step is to test the hypothesis that in addition to perfect vs. imperfect use, only age and coital frequency would be significant explanatory variables of failure for the ovulation method. Exploratory analysis revealed that separate models should be estimated for perfect use, for all imperfect use and for serious imperfect use (when one or more of the three most serious rules were broken). The most surprising finding is that for each of these use groups in models including only age and coital frequency as explanatory variables, coital frequency never adds significant explanatory power.

That finding is not simply the result of a reduction in the precision of the effects estimates caused by the lack of information on coital frequency during those cycles for which women did not record all acts (about half the total number of cycles). In addition to the fact that the effects estimates were almost never significantly different from zero, the results for coital frequency categories 1–2, 3–4, 5–6 and 7 or more times per cycle showed no consistent pattern.* Moreover, responses to an auxiliary question on average frequency of intercourse per week, which are missing much less often, yield equally inconsistent results. We are unwilling, however, to abandon our hypothesis that increased frequency of intercourse will result in a greater likelihood of failure and believe that the results raise suspicions about the accuracy of reporting of coital frequency.

Next, to discover which of the variables shown in Table 2 were significant predic-

*Coital frequency is significant in a model in which it is the only covariate. However, even in this model, the effect estimates for 3–4 times per cycle and seven or more times per cycle are not significantly different from the effect estimate for 1–2 times per cycle. Only the effect estimate for 5–6 times per cycle is significant, and it is significantly lower (not higher) than the effect estimates for the other three categories.

Figure 1. Annual probability of failure of the ovulation method, by type of rule breaking, according to number of cycles of imperfect use



Notes: Annual probability of failure calculated as $1-[(1-P_p)^{13-n}(1-P_i)^n]$, where n is the number of cycles of imperfect use and P_p and P_i are the per-cycle probabilities of failure during perfect and imperfect use. $P_p = 0.0024$; P_i takes the values 0.277 for serious imperfect use, 0.023 for less serious imperfect use and 0.142 for typical imperfect use. Serious imperfect use means breaking any of the rules forbidding intercourse on wet days, within three days after peak or during stress. Less-serious imperfect use means breaking any ruie in Table 3 other than those three. Typical imperfect use means breaking any ovulation method rule, with the mix of rules broken mirroring the experience of women in the WHO trial.

tors of failure, we added them sequentially to the models that included age and coital frequency. Only one variable—country of residence—proved important. Country-specific predicted probabilities of failure during the first year are shown in Table 4. During perfect use, there were no failures reported by women in India or El Salvador. Further tests revealed that among the remaining women, failure rates during perfect use did not differ between those aged 28–34 and those 35 and older or between women in New Zealand and those in Ireland. Also, further tests revealed that for both imperfect use and serious imperfect use, pooling the experiences of women from New Zealand, Ireland and the Philippines resulted in no loss of explanatory power. Moreover, age added no explanatory power during serious imperfect use.

We are troubled that the probability of failure during perfect, imperfect and serious imperfect use is affected by country of residence. This variable undoubtedly reflects cultural differences in reproductive and sexual behavior and may be serving as a proxy for real differences in coital frequency and the underlying fecundity of those who chose to participate in the trial. However, the finding may also simply reveal cultural differences in misreporting of rule breaking. We are dissatisfied with this result precisely because it is so difficult to interpret; furthermore, we reason that location should not matter if the proximate determinants are properly measured.

Risk Takers and Non–Risk Takers

In this part of our analysis, we examine risk-taking behavior itself, because it is such a central issue in the success or failure of the ovulation method. Because we are concerned with risk-taking and not with imperfect use resulting from poor understanding of the ovulation method, we will focus on conscious deviations from the ovulation method rules. We embed our investigation in the analytical framework constructed by Kristin Luker, who argues that women who take contraceptive risks lack neither information (as contraceptive ignorance theory implies) nor rationality (as intrapsychic conflict theory implies).[22] She argues instead that women are constantly bargaining tacitly with themselves "to determine the costs and benefits of contraception, the costs and benefits of pregnancy, the likelihood that pregnancy will occur" and the possibility that pregnancy can be terminated.[23]

Given the widespread appeal of this theory, the relative dearth of empirical tests of its validity is surprising. An analysis of data from a study of 221 sexually active female college students found that risk-taking is not affected by the subjective expected benefits and costs of contraceptive use and pregnancy or the subjective likelihood of abortion.[24] It did support other research that identifies the woman's belief in her chances of becoming pregnant as an important determinant of risk-taking. The analysis concludes that Luker's theory does not work because people are simply unable to choose consistently when faced with even moderate complexity or uncertainty.

We find these results unconvincing, however, because the investigators' measures of both risk-taking and past risk-taking are so limited. Risk-taking was measured by a question on the number of times during the past month that intercourse occurred without contraceptive use. Responses were retrospective, pertained to only one month and did not distinguish unprotected coitus at midcycle from unprotected acts of intercourse at less risky times. The only measure of past risk-taking was "having ever been pregnant," with no distinction between intended and unintended pregnancies. A second study, which does not suffer from the same defi-

Table 4. Percent failing during use of the ovulation method, by type of use and woman's age, according to country

Type of use and woman's age	Ireland and New Zealand		India		El Salvador		Philippines	
	Per cycle	Per year	Per cycle	Per year	Per cycle	Per year	Per cycle	Per year
Perfect use*								
≤27	1.4	17.2	0.0	0.0	0.0	0.0	0.2	2.0
≥28	0.4	5.4	0.0	0.0	0.0	0.0	0.0	0.6
Imperfect use†								
≤27	12.6	82.5	46.0	100.0	86.9	100.0	12.6	82.5
28–34	7.7	64.6	30.7	99.1	70.1	100.0	7.7	64.6
35–38	3.9	40.5	16.8	90.8	45.4	100.0	3.9	40.5
Serious imperfect use‡								
All ages	15.3	88.5	70.9	100.0	70.9	100.0	15.3	88.5

*Goodness of fit: X^2 against saturated model=5.53 with 11 degrees of freedom; p=0.90.

†Goodnes of fit: X^2 against saturated model=11.21 with 10 degrees of freedom; p=0.34.

‡Goodness of fit: X^2 against saturated model=15.95 with 13 degrees of freedom; p=0.25.

ciencies, analyzed data gathered prospectively over a three-year period from approximately 1,000 18–27-year-old women living in the San Francisco area.[25] It found that perceived attitudes toward pregnancy and contraception and the perceived risk of conception were related in the expected manner to consistency of contraceptive use.

Although we cannot execute a strict empirical test of Luker's theory, we instead use it to frame our expectations. The WHO investigators did not collect all the information pertinent to Luker's model, particularly information on attitudes toward abortion. However, given that only 3.7 percent of pregnancies were aborted, 83 percent of all subjects were Catholic and 41 percent of subjects chose the ovulation method specifically for religious reasons, it is likely that most women in the WHO trial did not view terminating a pregnancy as a realistic option.

Using logit regression,[*] we explore which subgroups of the population are more likely to take risks by consciously breaking the ovulation method rules. We would expect that those who themselves or whose partners desire intercourse more frequently than the ovulation method rules allow and those who themselves or whose partners are more dissatisfied with the method would be more likely to take a risk: These are the couples who would perceive the benefit of using the ovulation method as low. We would expect that couples who definitely want no more children (limiters) would be less likely to take risks than would those who seek to delay the next wanted birth (spacers), because limiters would assign higher cost to pregnancy than would spacers. For similar reasons, we would expect that older women and those whose partners are not regularly employed would be less likely to take risks.

Because all women in the study had conceived and delivered at least one child, all were aware that they were fecund. Given the intensive training period in the ovulation method trial, one might expect that all subjects would have a common (although, given the results in the previous section, perhaps not entirely realistic) perception of the risk of pregnancy should the ovulation method rules be broken. One might reason further that couples would perceive that breaking some rules (such as no intercourse during menses) is less likely to lead to pregnancy than is breaking other rules (such as no intercourse during slippery-mucus days). Specifically, educated couples might be more likely to take "innocuous" risks.

Fortunately, the WHO data for the ovulation method are detailed enough that we can explore alternative definitions of risk-taking (ranging from consciously breaking any rule to breaking the most serious rules). Luker strongly objects to the notion that women can be immutably classified as either successful or unsuccessful contraceptive users and that these two types can be differentiated by emotional maturity, future time perspectives or results on standardized psychological tests. She stresses that women constantly interpret facts about "average" women in light of their own unique experience. Thus, for women who take risks and do not become pregnant, risk-taking behavior is reinforced.

Our analysis avoids the strict dichotomous classification to which Luker objects by modeling the "dynamic updating" process that she describes. Instead of using the woman as the unit of observation, our unit of analysis will be a cycle of use, with each woman contributing up to 13 observations.[†] We model the dynamic updating process by including "got away with taking a risk last cycle" and "got away with taking a risk in the next-to-last cycle" as dichotomous covariates. More complex information on past behavior could easily be incorporated, but these two measures should be sufficient to produce clinically useful information. Note that a finding that prior risk-taking is associated with subsequent risk-taking does not necessarily confirm the Luker dynamic updating hypothesis because one would also find such an association if there were a couple-specific effect (propensity to take risks) that is constant over time but varies across couples. Nevertheless, for clinical purposes, what matters more is that past risk-taking predicts future risk-taking; those who take risks can be warned of the consequences, regardless of why they take risks.

With complete data, one might distinguish empirically a couple-specific effect from a dynamic updating process whereby couples who take a risk in the current cycle increase their propensity to take a subsequent risk if pregnancy does not occur but decrease their propensity if pregnancy does occur. In contrast to dynamic updating, couple-specific effects imply that the probability of further risk-taking is independent of whether pregnancy occurred during risk-taking. Under our sampling scheme, however, those who become pregnant disappear from observation. Hence, distinguishing between the two hypotheses becomes more difficult. Nevertheless, the competing hypotheses imply two differing properties that suggest formal tests. First, if only dynamic updating operates, the fraction taking risks should increase over time; if only a couple-specific effect is present, the fraction taking risks will decrease over time as those with the greatest probability of taking risks are removed from the sample by pregnancy. Second, under dynamic updating, the likelihood of taking a first risk should be constant over time, whereas with couple-specific effects the probability of taking a first risk should diminish as time passes, again because of selection. It is likely that both processes (selection and updating) operate, thereby making an assessment of their relative contributions less precise.

It is possible that other socioeconomic and demographic characteristics are associated with risk-taking, so we examine these less proximate determinants as well. The descriptive statistics for potential explanatory variables are displayed in Table 2. We first examined the predictors of any forms of conscious risk-taking, regardless of whether serious or less serious rules were broken; although rules were broken in 801 cycles, they were consciously broken in only 654 cycles. The upper half of Table 5 (page 14) presents our final model, which contains only the variables that add significant explanatory power. When variables have fewer categories than are shown in Table 2, tests revealed that collapsing categories did not result in significant loss of explanatory power.

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[*] The probability P_i that couples in group i will take a risk is expressed as $P_i=[1+\exp(-X_i'\beta)]^{-1}$, where X_i is a vector of characteristics for group i and β is the associated vector of regression coefficients. It can be verified that the logit or log-odds is a linear combination of the predictors: $\log_e[P_i/(1-P_i)]=X_i'\beta$.

[†] One might object to this strategy because of the expectation that there will be an effect for each couple, so that cycles cannot be analyzed as if they were independent observations. In fact, we have two strata: the cycle and the couple. We stress, however, that we do not assume that cycles are independent because we incorporate variables measuring prior risk-taking (lags) in our model. Another approach would be to include a couple-specific fixed effect in a conventional logit analysis, but doing so would entail the estimation of hundreds of nuisance parameters. A preferable alternative is to assume that the couple-specific effect is random. Then one must estimate only the parameters of the distribution assumed for the unobservable couple-specific effect (or the distribution may be left unspecified and estimated by nonparametric maximum likelihood [see: D. Follmann and D. Lambert, "Generalizing Logistic Regression by Nonparametric Mixing," *Journal of the American Statistical Association*, **84**:295, 1989]). Our intuition is that results from a random-effects model are likely to be very similar to and no more clinically useful than results from our model incorporating lags.

Most results conform to expectations. The likelihood of taking a risk is raised by an increase in coital frequency (but not by a desire for greater coital frequency—not shown since not significant*), by a desire for more children eventually or by taking a risk in either the last or the next-to-last cycle. Although taking a risk in both the last and the next-to-last cycle increases the probability of taking a risk, as a result of a significant negative interaction between these two variables, the increase in the log-odds is less than the sum of the main effects of risk-taking in each of the two previous cycles. Having an excellent attitude toward the ovulation method rules lowers the probability of taking a risk. Unexpectedly, having a partner who is unemployed or unskilled or who is a student raises the odds of taking a risk.

Country of residence is a factor with great explanatory power. Couples in New Zealand were most likely to take risks, followed by those in Ireland, those in the Philippines, those in El Salvador and those in India. The range is quite large; the odds of taking a risk for couples in New Zealand were nearly 42 times the odds for couples in India.

It is possible, however, that couples who are more likely to take risks take only less serious risks. To answer that question, we focus on serious risk-taking, which includes knowingly violating the three most serious rules—those forbidding intercourse during mucus days, during the three days after the peak and during times of stress. Although these serious rules were broken in 375 cycles, they were consciously broken in only 306 cycles. Although we know that breaking these three rules incurs the greatest risk of pregnancy, couples may not have this knowledge; hence, they may not be consciously breaking the rules they know to be most important. In the bottom half of Table 5, we show the likelihood of taking a serious risk for only those variables that contributed significant explanatory power. As before, when variables have fewer categories than are shown in Table 2, collapsing categories did not result in significant loss of explanatory power.

The results are broadly similar to those shown for all types of risk-taking. The probability of taking a serious risk increases with coital frequency (although there is no difference in the effects of frequencies of 3–6 and seven or more per cycle), but, as before, not when the woman desires greater frequency (not shown since not significant). The probability of serious risk-taking, unlike that of risk-taking overall, is not affected by a desire for more children but is affected by the age and education of the woman. Older women, literate women and women having an excellent attitude toward the ovulation method rules are less likely to take serious risks. As before, the probability of taking a serious risk increases when a serious risk was taken either in the last or in the next-to-last cycle. Moreover, unlike the case with any risk-taking, the log-odds of taking a serious risk when a serious risk was taken in both preceding cycles is increased by the sum of the separate main effects; there is no significant negative interaction. Having a partner who is unemployed, an unskilled laborer or a student raises the probability of taking a serious risk. The pattern by country of residence of the probability of taking serious risks is the same as that for taking any risks. In fact, the relative odds are very similar, except for the couples in New Zealand, whose odds of taking a serious risk, when compared with the odds for other couples, are only about half their odds of taking any risk.

Finally, there is no direct evidence of the dynamic updating process postulated by Luker (results not shown). The fraction of couples taking risks declines as time passes, even after the effects of all factors except prior risk-taking are controlled. This pattern is evident both for any risk-taking and for serious risk-taking, although the declines are not significant in either case.† The conditional probability of taking a first risk also declines over time, even after the effects of predictors other than prior risk-taking are controlled. This decline is significant both for any risks and for serious risks. These findings are consistent with selection resulting from unobserved couple-specific effects but are inconsistent with a dynamic updating process. Dynamic updating may well occur, but if so, it is dominated by selection.

A comparison of the two different types of risk-taking yields a number of insights. Wanting more children raises the probability that couples will take risks, but not serious risks. Older and more educated women are as likely as younger and uneducated women to take risks, but the risks they take are the less serious ones. Greater coital frequency, a poor attitude toward the ovulation method rules or having a partner who is unemployed or unskilled or who is a student increases the odds of taking risks in general as well as the odds of taking serious risks; moreover, the odds for these characteristics are about the same for both types of risk-taking. Taking a risk in the previous two cycles increases the odds of taking a risk in the current cycle by a factor of 7.6; taking a serious risk in the previous two cycles increases the odds of taking a serious risk in the current cycle to a far greater extent—a factor of 17.6 (not shown).

It is quite interesting that country of residence so heavily influences the likelihood of taking any risk and the likelihood of taking serious risks, and that the rank order by country is the same for both types of risks. Do these findings simply reflect differences in cultural attitudes toward risk-taking? Or do they suggest differences in the types of couples in each setting who would choose to use the ovulation method or pronounced differences in what the subjects actually learned from their instructors (or what actually was taught)? Or do they reveal differences in misreporting of imperfect use? Further research is needed to answer these questions.

Two variables deserve further discussion. First, the effect of prior risk-taking is understated in Table 5 because no couple could have taken a risk before the first cycle and no couple could have taken a risk two cycles before the first or second cycle. Reestimation of these models after we had discarded the first two cycles confirms that the effect of prior risk-taking is even more pronounced; taking a risk in the two previous cycles increases the odds of taking a risk in the current cycle by factors of 8.7 and 18.4 in models of risk-taking and serious risk-taking, respectively. Second, it is not clinically useful to know that displaying a poor attitude toward the ovulation method rules at the end of a cycle is associated with increased risk-taking in that cycle; indeed, the causation is probably reversed (i.e., taking a risk sours one's attitude). Hence, we reestimated the models (after discarding the first cycle) to see whether a poor attitude toward the ovulation method rules in the previous cycle predicts risk-taking in the current cycle. The results confirm that a

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*It is likely that this variable captures two opposite effects. On the one hand, those who desire coitus more frequently might break the rules to approach their desired target. On the other hand, those who obey the rules might be the ones who desire greater coital frequency, whereas those who break the rules attain their desired frequency. A more useful question would have explicitly asked whether the woman (or her partner) desires coitus more frequently *than the rules allow*.

†A poor attitude toward ovulation method rules may be the consequence rather than the cause of risk-taking. When the effect of this factor is not controlled, the decline for any risk-taking becomes significant, but the decline for serious risk-taking remains insignificant.

Table 5. Among users of the ovulation method, effects estimates and odds ratios of taking a risk during a cycle, by type of risk-taking and characteristics of user

Type of risk-taking and characteristic	Effects estimate	Standard error	Odds ratio
Any risk-taking[*]			
Intercept	–2.59	0.13	na
Coital frequency 1–2 or unknown per cycle[†]			
Coital frequency 3–6 per cycle	0.26	0.12	1.30
Coital frequency ≥7 per cycle	0.72	0.14	2.05
Couple wants no more children[†]			
Couple eventually wants more children	0.25	0.10	1.28
Partner is not unemployed, unskilled or a student[†]			
Partner is unemployed, unskilled or a student	0.82	0.18	2.27
Attitude toward rules is not excellent[†]			
Attitude toward rules is excellent	–2.32	0.14	0.10
Couple did not take risk last cycle[†]			
Couple took risk last cycle	1.63	0.15	5.12
Couple did not take risk two cycles ago[†]			
Couple took risk two cycles ago	1.04	0.17	2.83
Couple did not take risk in both of last two cycles[†]			
Couple took risk in both of last two cycles	–0.64	0.27	7.61[‡]
Dublin, Ireland[†]			
Bangalore, India	–1.70	0.19	0.18
Auckland, New Zealand	2.02	0.14	7.50
San Miguel, El Salvador	–0.90	0.22	0.41
Manila, Philippines	–0.29	0.14	0.75
Serious risk-taking[§]			
Intercept	–2.38	0.32	na
Coital frequency 1–2 or unknown per cycle[†]			
Coital frequency ≥3 per cycle	0.49	0.14	1.64
Woman aged ≤34 years[†]			
Woman aged ≥35 years	–0.66	0.18	0.52
Woman is illiterate[†]			
Woman is literate	–0.68	0.27	0.51
Partner is not unemployed, unskilled or a student[†]			
Partner is unemployed, unskilled or a student	0.79	0.23	2.20
Attitude toward rules is not excellent[†]			
Attitude toward rules is excellent	–2.42	0.23	0.09
Couple did not take serious risk last cycle[†]			
Couple took serious risk last cycle	1.77	0.20	5.89
Couple did not take serious risk two cycles ago[†]			
Couple took serious risk two cycles ago	1.10	0.23	3.00
Dublin, Ireland[†]			
Bangalore, India	–1.55	0.25	0.21
Auckland, New Zealand	1.39	0.18	4.00
San Miguel, El Salvador	–0.52	0.29	0.59
Manila, Philippines	–0.29	0.19	0.75

[*] Goodness of fit: X^2 against saturated model=1,838.0 with 1,999 degrees of freedom; p=0.99. Risk-taking is defined as consciously breaking any rules in Table 3.

[†] Reference category in logit regression.

[‡] Includes both main effects and the interaction; OR = exp (1.63+1.04–0.64).

[§] Goodness of fit: X^2 against saturated model=1,244.6 with 1,734 degrees of freedom; p=1.00. Serious risk-taking is defined as consciously breaking the three most serious rules, which forbid intercourse during mucus/wet days, within three days after peak and during periods of stress.

Notes: All effects estimates and odds ratios significant at $p<0.01$ using the appropriate one-tailed test, with the following exceptions: In the model for any risk-taking, those for Manila were significant at $p<0.05$, and in the model for serious risk-taking, those for San Miguel were significant at $p<0.05$ and those for Manila were not significant; na=not applicable.

poor attitude is a clinically powerful predictor of subsequent risk-taking overall and of serious risk-taking in particular, although the odds are increased by only about 50 percent in the two models (compared with a 10-fold increase in Table 5). We note that the effects estimates for other factors in each of these alternative models do not differ from the effects estimates reported in Table 5.

Conclusion

We strongly suspect that all methods of periodic abstinence will prove to be more unforgiving of imperfect use than will other methods of contraception, because breaking the rules of periodic abstinence involves having unprotected intercourse at times during the menstrual cycle when pregnancy is most likely to occur. The pill is probably the most forgiving (because forgetting to take a pill even in midcycle will not necessarily result in ovulation, much less pregnancy); barrier methods are likely to be less forgiving of imperfect use than the pill but more forgiving than periodic abstinence. Consequently, we believe that method failure rates for periodic abstinence computed by the standard (but incorrect) procedure are less likely to be underestimated than are those for other methods of contraception. User failure rates for periodic abstinence computed by the standard procedure, in contrast, are grossly underestimated.

Four results from this study should be clinically useful in counseling couples about the ovulation method. First and foremost, the efficacy of the ovulation method is high when used correctly and consistently, but the ovulation method is very unforgiving of imperfect use. Second, having intercourse during periods of stress is very risky (contrary to our expectations). Third, those who have a poor attitude toward the rules are likely to take risks, including serious risks. Fourth, those who get away with taking a risk are very likely to take risks, including serious risks, again. Breaking the most serious rules entails a 28 percent risk of pregnancy per cycle. Hence, those who are likely to take risks should be counseled about the serious consequences. Unfortunately, the last result is not helpful in identifying which couples are prone to take risks in their first cycle of use. Nevertheless, it does highlight the importance of a teaching phase during which couples are monitored closely for the first few cycles.

Fortunately, imperfect use is not very common (11 percent of cycles) and serious imperfect use is even less common (five percent of cycles). However, 46 percent of women broke an ovulation method rule (were imperfect users) and 31 percent broke a serious ovulation method rule (were serious imperfect users) in at least one cycle. Moreover, imperfect use is likely to be more common among couples who do not receive intense training and support such as that provided in the WHO clinical trial. Therefore, the ovulation method cannot be regarded as a reasonable contraceptive choice for all women or couples; most would find abstaining for nearly half of each menstrual cycle unacceptable. For this reason, Josef Roetzer, the pioneer of the sympto-thermal variant of periodic abstinence, stresses that "natural conception regulation" is not contraception, but a way of life.[26]

References

1. J. Trussell and K. Kost, "Contraceptive Failure in the United States: A Critical Review of the Literature," *Studies in Family Planning*, **18**:237, 1987.

2. World Health Organization (WHO), "A Prospective Multicentre Trial of the Ovulation Method of Natural Family Planning. I. The Teaching Phase," *Fertility and Sterility*, **36**:152, 1981; ——, "A Prospective Multicentre Trial of the Ovulation Method of Natural Family Planning. II. The Effectiveness Phase," *Fertility and Sterility*, **36**:591, 1981; ——, "A Prospective Multicentre Trial of the Ovulation Method of Natural Family Planning. III. Characteristics of the Menstrual Cycle and of the Fertile Phase," *Fertility and Sterility*, **40**:773, 1983; ——, "A Prospective Multicentre Trial of the Ovulation Method of Natural Family Planning. IV. The Outcome of Pregnancy," *Fertility and Sterility*, **41**:593, 1984; and ——, "A Prospective Multicentre Trial of the Ovulation Method of Natural Family Planning. V. Psychosexual Aspects," *Fertility and Sterility*, **47**:765, 1987.

3. WHO, "I. The Teaching Phase," 1981, op. cit. (see reference 2).

4. ——, "II. The Effectiveness Phase," 1981, op. cit. (see reference 2).

5. ——, 1987, op. cit. (see reference 2).

6. J. Trussell and K. Kost, 1987, op. cit. (see reference 1); and J. Trussell, D. Bloom and A. Pebley, "Correcting Contraceptive Failure Rates for Sample Composition and Sample Selection Bias," *Social Biology*, **28**:293, 1981.

7. M. C. Weissmann et al., "A Trial of the Ovulation Method of Family Planning in Tonga," *Lancet*, **II**:813, 1972.

8. J. Marshall, 'Ovulation Method of Family Planning," letter to the editor, *Lancet*, **II**:1027, 1972

9. R. Rochat, "Ovulation Method of Family Planning," letter to the editor, *Lancet*, **II**:1027, 1972.

10. H. Mosley, "Ovulation Method of Family Planning," letter to the editor, *Lancet*, **II**:1028, 1972.

11. M. Ball, "A Prospective Field Trial of the 'Ovulation Method' of Avoiding Conception," *European Journal of Obstetrics, Gynecology and Reproductive Biology*, **6**:63, 1976; P. J. Bartzen, "Effectiveness of the Temperature Rhythm System of Contraception," *Fertility & Sterility*, **18**:694, 1967; L. Dolack, "Study Confirms Values of Ovulation Method," *Hospital Progress*, **59**:64, 1978; J. A. Johnston, D. B. Roberts and R. B. Spencer, *A Survey Evaluation of the Efficacy and Efficiency of Natural Family Planning Services and Methods in Australia: Report of a Research Project*, St. Vincent's Hospital, Sydney, Australia, 1978; R. Kambic et al., *A 30-Month Clinical Experience in Natural Family Planning: Some Client Characteristics and Effectiveness in Avoiding Pregnancies*, St. Joseph Hospital, Lancaster, Pa., 1981; H. Klaus et al., "Use-Effectiveness and Client Satisfaction in Six Centers Teaching the Billings Ovulation Method," *Contraception*, **19**:613, 1979; A. Perez et al., "Use-Effectiveness of the Ovulation Method Initiated During Postpartum Breastfeeding," *Contraception*, **38**:499, 1988; F. J. Rice, C. A. Lanctot and C. Garcia-Devasa, "Biological Effectiveness of the Sympto-Thermal Rhythm Method: An International Study. A Preliminary Report," *Acta Medica Romana*, **16**:349, 1978; M. C. Weissmann et al., 1972, op.cit. (see reference 7); and WHO, "The Effectiveness Phase," 1981, op.cit. (see reference 2).

12. H. Dubrow and K. Kuder, "Combined Postpartum and Family Planning Clinic," *Obstetrics & Gynecology*, **11**:586, 1958; E. Mears and N. W. Please, "Chemical Contraceptive Trial," *Journal of Reproduction and Fertility*, **3**:138, 1962; A. P. K. John, "Contraception in a Practice Community," *Journal of the Royal College of General Practitioners*, **23**:665, 1973.

13. E. Mears and N. W. Please, 1962, op. cit. (see reference 12); and A. P. K. John, 1973, op. cit. (see reference 12).

14. H. Dubrow and K. Kuder, 1958, op. cit. (see reference 12).

15. D. A. McClure and D. A. Edelman, "Worldwide Method Effectiveness of the Today* Vaginal Contraceptive Sponge," *Advances in Contraception*, **1**:305, 1985.

16. S. L. McIntyre and J. E. Higgins, "Parity and Use-Effectiveness with the Contraceptive Sponge," *American Journal of Obstetrics and Gynecology*, **155**:796, 1986; and J. Trussell, "Reply to Edelman," *Contraceptive Technology Update*, **10**:65, 1989.

17. WHO, "I. The Teaching Phase," 1981, op. cit. (see reference 2).

18. B. Vaughan et al., "Contraceptive Failure Among Married Women in the United States, 1970–1973," *Family Planning Perspectives*, **9**:251, 1977; A. L. Schirm et al., "Contraceptive Failure in the United States: The Impact of Social, Economic and Demographic Factors," *Family Planning Perspectives*, **14**:467, 1982; and W. R. Grady, M. D. Hayward and J. Yagi, "Contraceptive Failure in the United States: Estimates from the 1982 National Survey of Family Growth," *Family Planning Perspectives*, **18**:200, 1986.

19. J. Trussell and K. Kost, 1987, op. cit. (see reference 1).

20. J. Menken, J. Trussell and U. Larsen, "Age and Infertility," *Science*, **233**:1389, 1986.

21. J. Trussell and K. Kost, 1987, op. cit. (see reference 1).

22. K. Luker, *Taking Chances*, University of California Press, Berkeley, 1975.

23. Ibid., p. 85.

24. P. Crosbie and D. Bitte, "A Test of Luker's Theory of Contraceptive Risk-Taking," *Studies in Family Planning*, **13**:67, 1982.

25. W. Miller, "Why Some Women Fail to Use Their Contraceptive Method: A Psychological Investigation," *Family Planning Perspectives*, **18**:27, 1986.

26. J. Roetzer, personal communication, Jan. 2, 1990.

Resumen

Todas las estadísticas de falla de método o usuaria publicadas anteriormente adolescen de un grave error metodológico que produce una subestimación indeterminada. Para efectuar los primeros cómputos correctos de la eficacia de método y usuaria y determinar las características que distinguen a las mujeres que corren conscientemente riesgos de las que no, se utilizaron los datos obtenidos por la Organización Mundial de la Salud a raíz de una prueba clínica del método de ovulación de abstinencia periódica. Las probabilidades de que la mujer quede embarazada durante el primer año son del 3,1 por ciento con un uso perfecto (falla del método) y del 86,4 por ciento con un uso imperfecto (falla de la usuaria). De manera que, de emplearse perfectamente, el método de ovulación resulta sumamente eficaz. Es, sin embargo, tremendamente implacable cuando no se aplica correctamente. Dado que a muchas parejas que desean tener relaciones cuando el método lo prohíbe les resulta difícil aplicarlo al pie de la letra, y por cuanto el riesgo de embarazo en esas condiciones es tan elevado, el método de ovulación no puede considerarse anticonceptivo ideal para la pareja típica, que seguramente no ha de respetar tanto las reglas como las que se ofrecen voluntarias para pruebas clínicas. Las mayores probabilidades de embarazo accidental ocurren cuando se quebranta cualquiera de las reglas básicas: abstinencia durante los días de secreción de la mucosa, durante los tres días posteriores a la fecundidad máxima o en momentos de tensión. Las mujeres que adoptan una actitud irresponsable frente a las reglas son más propensas a correr riesgos, incluso graves. Quienes corren el riesgo y no sufren consecuencias (es decir que no quedan embarazadas) de seguro volverán a hacerlo. Como quebrantar las reglas fundamentales entraña riesgos del 28 por ciento por ciclo, es necesario advertir de las consecuencias a las mujeres propensas a correrlos.

Résumé

Les estimations, publiées auparavant, de probabilités d'échec de méthode et d'utilisatrice pour toutes les méthodes contraceptives souffrent d'une grave erreur méthodologique et sont déformées vers le bas, l'étendue de la déformation étant inconnue. Des données, tirées d'un essai clinique effectué par l'Organisation mondiale de la santé sur la méthode d'abstinence périodique, ont été utilisées pour obtenir les premières mesures, calculées correctement, de l'efficacité de la méthode et de l'utilisatrice, et pour déterminer les caractéristiques distinguant les femmes qui prennent consciemment des risques de celles qui ne le font pas. Les probabilités de grossesse durant la première année sont de 3,1 pour cent lors d'une utilisation parfaite (échec de la méthode) et de 86,4 pour cent lors d'une utilisation imparfaite (échec de l'utilisatrice). Si elle est utilisée à la perfection, la méthode d'ovulation est donc très efficace. Elle est, cependant, très impitoyable pour l'utilisation imparfaite. Etant donné que l'observance parfaite est difficile pour un grand nombre de couples qui désirent avoir des rapports lorsqu'ils sont interdits suivant les règles de la méthode d'ovulation, et étant donné que le risque de grossesse durant l'utilisation imparfaite est si élevé, la méthode d'ovulation ne

(Continued on page 28)

Family Planning Among Low-Income Women In Rio de Janeiro: 1984–1985

> **"It appears that sterilization has changed from being a method of last resort for women who have exceeded their desired family size to being a preferred means of fertility control among women of relatively low parity."**

By Sarah Hawker Costa, Ignez Ramos Martin,
Sylvia Regina da Silva Freitas and Cristiane Schuch Pinto

Summary

A 1984–1985 survey in seven slum communities of Rio de Janeiro found that seven percent of sexually active women aged 15–49 were pregnant, 20 percent had been contraceptively sterilized and five percent were infertile. The remaining 68 percent were fecund: Some 42 percent were using a reversible method of birth control, and 27 percent were not pregnant or trying to become pregnant and were not using any contraceptive method. The pill and female sterilization were the two leading birth control methods among currently married women practicing contraception, used by 53 percent and 33 percent, respectively.

The relatively high levels of sterilization and pill use among low-income women found in the survey are striking. However, knowledge of and access to other methods are limited, and consequently, some women were found to be using inappropriate methods. For example, 15 percent of sterilized women said they wanted to have another child. In addition, the survey found that 43 percent of current pill users also smoked, and five percent were both older than 45 and cigarette smokers. Fifty percent of the pill users reported that they suffered from such contraindications to pill use as high blood pressure, heart problems, diabetes, kidney disorders or varicose veins. Only 42 percent had seen a doctor before using oral contraceptives, which are available without a prescription.

Background

Brazil is the largest and most populous country in Latin America, with a population that is projected to reach about 170 million by the year 2000.[1] Census and registration statistics have shown that fertility has been declining in Brazil since the middle of the 1960s; the total fertility rate dropped from 6.2 children per woman in 1960 to 3.5 in 1986.[2] The largest declines between 1980 and 1984 occurred in the Central East region (a 25 percent drop) and in the Northeast (20 percent). Because poorer women make up the major part of the population of these two regions, the data suggest that they are reducing their childbearing substantially.[3] In addition, a number of surveys have demonstrated increases in contraceptive practice among Brazilian women.[4] These changes have occurred in the absence of an effective government-sponsored family planning program, although since 1983, the Ministry of Health has made contraceptive services available as part of its Comprehensive Health Care Program for Women, and the Ministry of Social Security (Instituto Nacional de Assistência Médica e Previdência Social—INAMPS) began a similar program in 1985.

The survey described in this article was designed to measure patterns of contraceptive practice in seven slum communities (*favelas*) of Rio de Janeiro in late 1984 and early 1985. The results will be compared with data gathered in the 1986 Brazilian Demographic and Health Survey (DHS) for the urban area of Rio de Janeiro. The favela survey was undertaken as preparation for offering family planning services out of the community health center that is attached to the National School of Public Health in Rio de Janeiro. The health center (Sinval Germano Filho) began offering contraceptive information to residents of these favelas in 1985 and added services in 1987, providing the pill, the IUD and the diaphragm to women of all ages, regardless of marital status. However, at the time of the survey, women living in the communities around the health center obtained their methods mainly from drugstores (if they were using the pill or condoms) and through government-reimbursed public hospitals or private clinics (if they were seeking sterilization). A small minority obtained services from private family planning clinics run by the Sociedade Civil Bem-Estar Familiar no Brasil and by the Centro de Pesquisas de Assistência Integrada à Mulher e à Criança (CPAIMC), which provides maternal and child health and family planning services.

The Survey Sample

On the basis of a two-stage stratified random sampling procedure, respondents were selected from among all women aged 15–49 living in the catchment area of the Sinval Germano Filho health center. This area of Rio de Janeiro covers seven slum neighborhoods* of varying ages. The oldest was established for returning veterans after World War II; the newest was established in 1955. The communities are located in the northern zone of the city and contain heavy industries, including an oil refinery, which makes this one of the most polluted areas in Rio. Rapid growth has led to considerable overcrowding and to a deterioration in the already poor living conditions. Dwellings are tightly packed together, and access is often possible only through a network of narrow alleys and passages. As space has become more and more scarce, homes have gone up along the banks of the river that cuts across the region, and in some cases, they have been built on stilts projected above the water.

Over 90 percent of households have elec-

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*Amorim, Carlos Chagas, Ex. Combatentes, João Goulart, Perereca, Vila Turismo and Vila União.

tricity, although many obtain it through illegal (and dangerous) connections. Only a few households have running water—the majority depend on public taps for their supply. Raw sewage flowing along open canals creates serious health problems, particularly after heavy rains. Seven out of 10 houses in the communities have three or fewer rooms (four out of 10 have two or fewer), and six out of 10 have cement floors. The area is well served by public transportation services, and there are several primary schools and two large hospitals within the area. Municipal and state primary health care services are available, but are often of poor quality and inadequate to the needs of the population.

The age structures and socioeconomic profiles of the seven slum communities tend to differ somewhat, the residents being generally older and slightly more prosperous in the more settled communities than in the more recently established ones. The sample size needed to estimate contraceptive prevalence was stratified for slum area, with sample fractions varying according to stratum. Data presented in this article are based on a pooled sample, since no significant difference in contraceptive practice was detected among the slum communities.

Most of the women living in the favelas are migrants from other parts of the country, particularly the underdeveloped North and Northeast regions. The average number of live births among respondents aged 40–44 (who are likely to have completed childbearing) was 3.8. Among married women in this age-group, it was 3.9.

Table 1 compares the characteristics of the 1,783 women finally interviewed with those of women who made up the urban Rio de Janeiro portion of the sample for the DHS carried out in Brazil in 1986. The latter included only women up to the age of 44, whereas the current sample includes women up to the age of 49. If the favela sample is redistributed into a 15–44 age range, it becomes apparent that the women in it are slightly younger than those participating in the DHS. As the table indicates, female educational levels are very low in these communities: Seventy-four percent of the favela women (as compared with 62 percent in the DHS sample[5]) have not completed primary school or are illiterate. Only eight percent have at least completed secondary school.

As regards family income, the numbers are somewhat deceptive. The poverty standard in Brazil is usually measured in terms of households with less than half the minimum salary per capita. Since the average household among respondents contained five members, all families with less than 2.5 times the minimum salary as a combined income—over half of the sample—must be considered to have been living in poverty. Because the DHS sample covers the whole city, including its middle-class sections, the women in it are, on average, more affluent than the slum women.* The DHS urban sample for Rio is, therefore, somewhat older, better educated and less poor than that in the favela survey.

In addition, the favela survey defined marital status somewhat differently from most surveys in order to create a more representative group of women at risk of pregnancy. As is customary, women were asked if they were married (consensually or legally); single; or widowed, divorced or separated. However, single women and formerly married women were also asked if they had a steady but not cohabiting relationship with a man. If so, these women were grouped among those in a union. The proportion in union in the favela survey was six percentage points greater than in the DHS (65 percent as compared with 59 percent), while the category of women widowed, divorced and separated was four points less, and the proportion single, two percentage points less.

Sexual Activity and Contraceptive Use

All ever-married women, whatever their current status, were assumed to be sexually active. Among the never-married (30 percent of the total), 27 percent reported having had sexual intercourse at some time. This proportion varied, of course, by the woman's age: among single women 15–19, 11 percent had had sexual intercourse; among those 20–24, 26 percent had done so; and among the older groups, over one-half had done so. The level of teenage sexual activity among the unmarried is slightly higher than the six percent found nationally in the 1986 DHS.[6] Measures in both surveys are likely to be underreported, given the social and moral taboos against premarital sex in Brazil. In the favela survey, older family members were often present when the teenagers were interviewed, making it more likely that sexual activity would be underreported among this age-group.

Table 1. Percentage distributions of the 1984–1985 favela survey sample and the 1986 Demographic and Health Survey urban Rio de Janeiro sample, by various characteristics

Characteristic	Favela survey (N=1,783)	DHS (N=617)
Age-group		
15–19	17.3	17.4
20–24	18.8	19.1
25–29	18.7	19.8
30–34	16.4	18.5
35–39	11.3	12.9
40–44	9.2	12.3
45–49	8.3	na
Educational level		
Illiterate	12.6	12.3
Some primary	61.5	49.8
Primary, some secondary	17.7	29.9
Secondary or more	8.2	8.0
Family income (in multiples of the minimum salary)		
Unknown or no income	5.2	u
<1	6.0	u
1–2.99	55.2	u
3–4.99	21.6	u
≥5	12.0	u
Marital status		
In union*	65.2	59.2
Single	30.2	32.2
Widowed, divorced, separated	4.6	8.6
Work status		
Works outside home	32.8	u
Works at home	15.1	u
Does not work	52.1	u
Total	100.0	100.0

*In this and subsequent tables, refers to legal and consensual unions.

Notes: In this and subsequent tables, na=not applicable; u=unavailable.

Source: For DHS data in this and subsequent tables, special tabulations.

The fecundity status of the women who had had sexual intercourse (the vast majority of whom were currently in union) is shown in Table 2 (page 18). This analysis reveals that seven percent of women were pregnant at the time of the survey (exactly the same as in the DHS sample for urban Rio de Janeiro[7]), 20 percent had been contraceptively sterilized (as compared with 29 percent according to the 1986 DHS[8]) and five percent were infertile. The 68 percent of the total who remained fecund consisted of 42 percent who were using a reversible method of birth control (39 percent in the DHS[9]) and 27 percent who were not practicing any kind of fertility regulation (22 percent in the DHS sample[10]). The higher level of contraceptive sterilization

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*The DHS sample is based on the sample used for Brazil's yearly household survey, the Pesquisa Nacional por Amostra de Domicílios (PNAD). The PNAD of 1986 shows that only about 15 percent of households in the urban Southeast region have family incomes of 1–3 times the minimum salary, compared with 55 percent in the favela survey. (See: Fundação Instituto Brasileiro de Geografia e Estatística, *Perfil Estatístico de Crianças e Mães no Brasil*, UNICEF, Rio de Janeiro, 1988, Table 2.)

Table 2. Percentage distribution of low-income women in Rio de Janeiro who have ever had sexual intercourse, by fecundity status, according to age-group

Fecundity status	Total (N=1,359)	15–19 (N=88)	20–24 (N=230)	25–29 (N=304)	30–34 (N=270)	35–39 (N=197)	40–44 (N=165)	45–49 (N=145)
Pregnant	6.5	20.5	10.9	7.2	5.2	4.1	1.9	0.7
Using a reversible method	41.7	45.4	60.9	54.6	40.7	31.9	23.0	17.2
Using no method	26.7	34.1	25.6	21.7	21.9	27.0	35.3	33.8
Contraceptively sterilized	19.8	0.0	2.6	16.1	31.9	33.5	28.6	15.9
Menopausal or had a hysterectomy	5.3	0.0	0.0	0.3	0.3	3.5	11.2	32.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

and the lower level of nonuse found in the DHS sample for urban Rio can probably be explained by the older age, higher educational level and greater affluence of that sample rather than by any change in contraceptive practice in the period between the two studies. The survey findings reported here also differ greatly from the DHS findings in one other respect—levels of current pregnancy among teenagers and women aged 20–24. The proportion of 15–19-year-olds who were pregnant is double the level found in the DHS (21 percent compared with 10 percent) whereas the proportion of women aged 20–24 who were pregnant is roughly half the level found in the DHS (11 percent compared with 19 percent).[11]

As might be expected, levels of natural infecundity and sterilization were higher among the older than among the younger women. For example, 40 percent of women 40–44 were incapable of conceiving for either of these reasons. The level of contraceptive nonuse also varied widely with the woman's age, going from 22 percent among those aged 25–34 to 34–35 percent among teenagers and women 40–44. Some of these women, especially in the younger age-groups, were trying to become pregnant, and some, especially in the older age-groups, were likely to have thought they were no longer capable of conceiving. Overall, approximately two percent said they were seeking pregnancy, and one percent said they had had unprotected intercourse for at least three years without becoming pregnant (not shown). Other women were likely to be amenorrheic or breastfeeding after a recent pregnancy, and consideration of these factors would reduce still further the proportion of women truly at risk of pregnancy. Nevertheless, the measures presented here indicate that approximately one-fourth of all the sexually experienced women surveyed were fecund, not pregnant or trying to become pregnant and not using any contraceptive method to avoid pregnancy.

Table 3. Percentage of women using any contraceptive method (including female sterilization), and percentage contraceptively sterilized, by age-group and marital status, favela survey and DHS

Characteristic	Using any method		Contraceptively sterilized	
	Favela survey (N= 1,783)	DHS (N= 617)	Favela survey (N= 1,783)	DHS (N= 617)
All women	**48.6**	**50.6**	**15.8**	**21.6**
Age-group				
15–19	12.9	10.5	0.0	0.0
20–24	43.9	33.8	1.8	3.7
25–29	64.4	61.7	14.7	18.4
30–34	67.2	70.5	29.4	37.1
35–39	64.0	67.4	32.7	43.5
40–44	51.8	68.2	29.2	38.6
45–49	36.0	na	18.3	na
Marital status				
In union	66.8	71.8	21.9	33.7
Single	35.1	10.1	4.0	0.5
Widowed, divorced, separated	44.4	42.0	25.9	18.0

All respondents were asked to list the ways they knew of regulating their fertility. If a woman did not mention a method spontaneously, the interviewer described it and then asked her if she was familiar with it. As Figure 1 shows, the level of spontaneous knowledge about any method other than the pill (mentioned spontaneously by a remarkably high 92 percent) is quite low. Forty-two percent mentioned the IUD; 35 percent, the rhythm method; and 25 percent, female sterilization. Spontaneous knowledge of other methods did not exceed 18 percent. After prompting, however, levels of knowledge jumped to 91 percent for female sterilization, 84–87 percent for the IUD, rhythm and the condom, and around 50 percent for injectables, spermicides and withdrawal. Levels of both spontaneous and prompted knowledge are lowest among teenage women and those over the age of 39 (not shown).

It is difficult to interpret the real meaning of these wide differences between spontaneous and prompted knowledge. One interpretation, however, is that women who need contraceptive protection tend to mention spontaneously the one method that is readily available in pharmacies—the pill—rather than those methods that are difficult to seek out. The difference between spontaneous knowledge of female sterilization and prompted knowledge may reflect the women's perceptions of this method. Many women may consider sterilization to be less of a method for avoiding pregnancy and more of one for terminating childbearing.

Table 3 shows levels of contraceptive use (including reliance on sterilization) and the proportion sterilized among all women, regardless of their fecundity status. Again, findings from the urban Rio de Janeiro sample of the DHS are shown for the sake of comparison. Contraceptive prevalence varies greatly with the woman's marital status and age. The highest overall prevalence level is to be found among women aged 30–34 and women currently in union (67 percent—similar to the level of 71–72 percent found in the 1986 DHS[12]); the lowest, among women aged 15–19 (13 percent), those aged 45–49 (36 percent) and single women (35 percent). These low rates may indicate that a good number of teenagers and most single women are not involved in a sexual relationship, and, as we have just shown, many older women are no longer fecund. Some 16 percent of women 15–49 had been contraceptively sterilized; the proportion ranges from only two percent of those aged 20–24 to 33 percent of those aged 35–39. In terms of marital status, the highest proportion sterilized is found among formerly married women, probably because these women are older, on average, than currently married women. The somewhat higher DHS rates for all methods and for sterilization, again, probably reflect the slightly higher status of that sample.

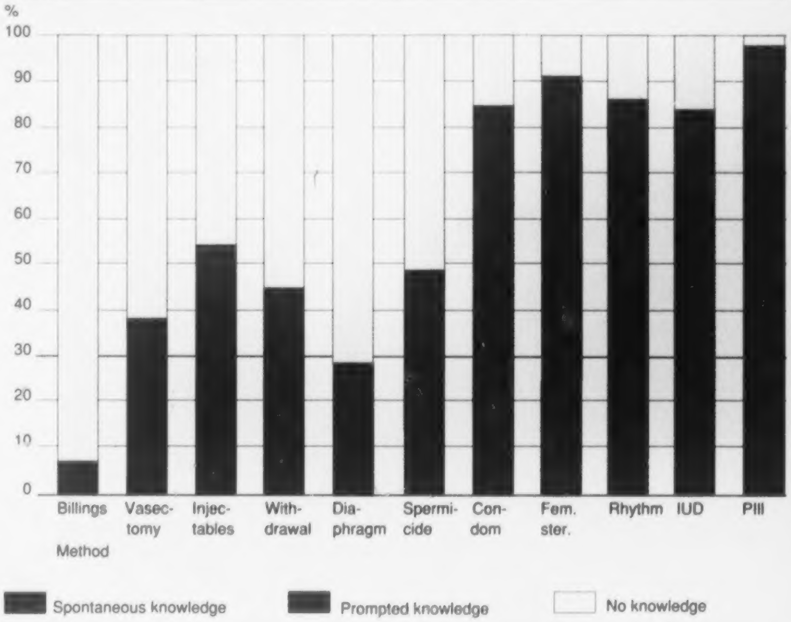
We have seen that the greatest level of contraceptive use is found among married women. What kinds of contraceptive methods are they using? By far the predominant method among favela women, as Table 4 (page 20) shows, is the pill (which accounts for 53 percent of all contraceptive practice among married women 15–49); female sterilization follows (33 percent). Only 14 percent of use is attributable to any other method, mainly rhythm (four percent) and the IUD, condoms, spermicides and withdrawal (each about two percent). The type of contraceptive used is strongly related to the user's age. Among married teenage users, the pill is the choice of almost nine out of 10; the remainder rely on the rhythm method or have their partners use condoms. Among married women 20–24 using a method, eight out of 10 rely on oral contraceptives, whereas among those 40–44, only three out of 10 do so; in the latter age-group, over half have been sterilized. The pill assumes less importance among married users over the age of 44, and reliance on other reversible methods (especially rhythm) is at its highest level in this group.

The pattern of contraceptive use varies much less by education or family income than it does by the woman's age. The best-educated married users are somewhat less likely than average to be contraceptively sterilized, and the most affluent are somewhat more likely than average to be using a reversible method other than the pill. However, if all married women, rather than all users, are taken into consideration, the 1986 DHS shows that better-educated women are *more* likely than those with less schooling to opt for sterilization as a means of fertility regulation.[13] This finding is supported by contraceptive prevalence patterns observed among the slightly older, better-educated and wealthier DHS sample. For every age-group and educational level, pill use among this sample is lower and reliance on sterilization is higher than among the women in the favela survey. The differences are particularly marked among older women, possibly because they have easier financial access to sterilization services provided by private doctors than do their poorer counterparts.

It is instructive to compare the patterns of contraceptive use found in urban Brazil with those in neighboring Colombia. If 1986 DHS data for urban Rio de Janeiro are compared, for example, with those for the same year in Bogotá or even in all urban areas of Colombia (using the DHS data for that country), the proportions of married women using various methods are as follows:

Method	**Urban Rio**	**Bogotá**	**Urban Colombia**
Pill	36	18	26
Fem. ster.	47	22	27
Other	17	60	47
Total	100	100	100

Figure 1. Percentage distribution of all women by type of knowledge about various contraceptive methods



In Bogotá, married women clearly use a far wider choice of reversible methods other than the pill than do women from urban Rio de Janeiro, and there is considerably less reliance on female sterilization.[14] There is no official national family planning program in Colombia, and pills are available in drugstores, as they are in Brazil. The private family planning association, Profamilia, serves 39 percent of all Colombian women using a supply method of birth control; 33 percent obtain their method from pharmacies, and 15 percent from Ministry of Health hospitals and health centers.[15] Profamilia's urban clinics provide the full range of contraceptive methods at low cost to all women seeking such care.[16]

Interviewers closely questioned women to find out if they might have some contraindications to pill use, since this was such a widely used method and is available in Brazil without a doctor's prescription. The findings are worrisome, revealing that 43 percent of current pill users also smoked. Thirty-two percent of women in this group smoked over 10 cigarettes a day, and 10 percent smoked over 20 a day. In addition, five percent of all pill users were both over the age of 45 and cigarette smokers.

All women were also asked whether they suffered from high blood pressure, heart problems, diabetes, kidney disorders or varicose veins (all contraindications to pill use). Although there was no attempt to verify the responses clinically, the anecdotal reports are disturbing. Fifty percent of both pill users and all other women said that they suffered from at least one of these health problems. Among women over the age of 34, 68 percent of pill users and 74 percent of all others had at least one of these conditions.

A total of 466 women were using the pill at the time of the survey. Only 42 percent had seen a doctor before starting use, even though 64 percent had consulted a doctor in the year before the survey. Only one-third were using a low-dose combination. More than eight out of 10 pill users said that they had experienced some kind of unwelcome side effect (mostly "nervousness," headaches, weight gain, menstrual disturbances and nausea), but 65 percent of these had not consulted a doctor to report their symptoms. The main reason given for not doing so was that it was unnecessary; lack of time and a dislike of going to the doctor were the next most common responses. Of those who did see a doctor, one-fifth continued to use the pill against the doctor's advice, mostly out of a fear of pregnancy or because this was the only method they trusted. Reports of side effects are difficult to analyze, since they may be influenced by cultural, biological

Table 4. Percentage distribution of currently married women practicing contraception, by method used, according to various characteristics, favela survey and DHS

Characteristic	Favela survey				DHS			
	Pill	Fem. ster.	Other	Total	Pill	Fem. ster.	Other	Total
All women	**53.3**	**32.8**	**13.9**	**100.0**	**35.9**	**46.6**	**17.5**	**100.0**
Age-group								
15–19	88.5	0.0	11.5	100.0	87.5	0.0	12.5	100.0
20–24	80.1	4.6	15.3	100.0	71.0	12.9	16.1	100.0
25–29	65.8	23.8	10.4	100.0	48.1	35.2	16.7	100.0
30–34	46.4	43.2	10.4	100.0	28.2	56.3	15.5	100.0
35–39	36.4	48.8	14.8	100.0	15.9	68.2	15.9	100.0
40–44	28.8	54.8	16.4	100.0	16.3	55.8	27.9	100.0
45–49	18.0	50.0	32.0	100.0	na	na	na	100.0
Educational level*								
Illiterate	45.6	33.3	21.1	100.0	40.0	53.3	6.7	100.0
Some primary	53.7	34.9	11.4	100.0	38.7	48.0	13.3	100.0
Primary or more	57.4	25.9	16.8	100.0	28.2	40.8	31.0	100.0
Family income (in multiples of the minimum salary)								
<1	54.0	30.1	15.9	100.0	u	u	u	100.0
1–2.99	54.9	32.7	12.4	100.0	u	u	u	100.0
3–4.99	52.4	33.3	14.3	100.0	u	u	u	100.0
≥5	47.6	35.4	17.0	100.0	u	u	u	100.0

*For the DHS breakdown, the three educational categories are illiterate, complete primary and secondary schooling or more.

or individual factors. In addition, the symptoms may not be attributable to the use of oral contraceptives.

Women were also closely questioned as to the way in which they used the pill. Twenty-three percent (and 36 percent of users aged 35–39) were taking it incorrectly—on alternate days or only prior to or after sexual intercourse, for example. Most of these women knew the right way but chose not to follow instructions for a variety of reasons, such as to avoid disagreeable side effects or to reduce the overall cost of supplies.

Related Issues

One in every six women interviewed were under the age of 20. This is the only age-group of women in Brazil to demonstrate a virtually unchanged fertility rate in the last decade, while the rate declined rapidly among the remaining age-groups.[17] (The age-specific fertility rate for women 15–19 increased from 74.8 births per 1,000 in 1970 to 79.8 in 1980, and then decreased to 74.0 per 1,000 in 1984.[18])

Only 24 percent of teenage women said they had ever had sexual intercourse; this group was made up of 19 percent who were married and five percent who were single (11 percent of all single adolescents). The average age of women in this group is likely to be between 17 and 18; if we wish to examine the completed experience of teenagers, we can look at the reproductive lives of women currently 20–24 while they were teenagers (that is, before reaching their 20th birthday). Figure 2 indicates that at age 15, some 20 percent had already become sexually active, and six percent had entered union. At age 17, these proportions rose to 31 percent and 20 percent, respectively. By age 19, 52 percent of women had had intercourse, and 39 percent had married (legally or consensually). These proportions are very similar to those found among all women 20–24 in the 1986 DHS—50 percent had had sex, and 39 percent had married for the first time before their 20th birthday.[19] Ever-use of a contraceptive ranges from 18 percent at age 17 to 39 percent at age 19. A probable explanation for these low levels is that most sexually active teenagers are in a union and trying to become pregnant, or at least not trying to postpone pregnancy.

Over the past two decades, female sterilization has become one of the most widely used methods of fertility regulation in Latin America,[20] a trend that has greatly surprised health professionals in the region, who had believed that women in this part of the world would be resistant to this method.[21] In 1986, the DHS found that female sterilization was the leading method of birth control used by married Brazilian women aged 15–44 (27 percent), followed closely by the pill (25 percent).[22]

Among all women aged 15–49 living in the slums of Rio de Janeiro, 16 percent have been contraceptively sterilized. Ninety percent of these women are currently in union; eight percent are widowed, divorced or separated; and two percent are single. Some other characteristics of these women are shown in Table 5, which indicates that 48 percent of sterilized women underwent the operation before the age of 30, and 73 percent before the age of 35. Thirty-one percent had had fewer than three live births, and 22 percent had had more than four by the time they chose to terminate childbearing. INAMPS hospitals and private doctors contracted by INAMPS were the major providers of sterilization for these women. Through these providers, the procedure should be free of cost to the woman; however, 70 percent of respondents who used these services reported that a payment was necessary to obtain the operation. Only 27 percent of sterilized women had gone to a private

Figure 2. Percentage of women aged 20–24 who had had intercourse, entered a union or used a contraceptive method before the age of 20, by age at which the event first occurred

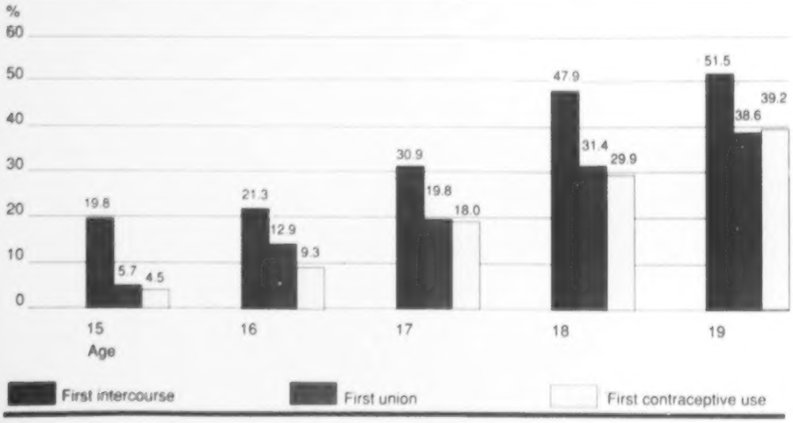


Table 5. Percentage distribution of low-income women who have been contraceptively sterilized, by various characteristics

Characteristic	% (N=282)
Age at sterilization	
≤24	12.1
25–29	35.8
30–34	25.5
≥35	26.6
No. of live births	
1	2.8
2	28.2
3	27.0
4	19.9
5	6.8
≥6	15.3
Place of sterilization	
INAMPS facility	9.9
Private physician contracted by INAMPS	49.6
Federal, state or municipal health service	13.5
CPAIMC	11.7
Private service or physician	9.9
Other and unknown	5.3
Timing of operation	
Postcesarean	62.8
After vaginal delivery	3.5
Interval procedure	28.4
Unknown	5.3
Previous reversible methods used*	
Pill	81.2
Condom	22.0
IUD	5.8
Rhythm	17.7
Withdrawal	14.4
Other	16.2
None	3.2
Reason for sterilization	
Wanted no more children	60.6
Health problems	24.1
Unable to use pill	6.4
Financial situation	3.5
Other	5.4
Total	100.0

*Percentages add to more than 100 because women may have used more than one method.

clinic or other location, and 78 percent of them reported having paid for services.

Sixty-three percent of all sterilized women had the operation after a cesarean delivery. (The national level from the 1986 DHS is 64 percent.[23]) Other data (not shown) indicate that an even higher proportion—three-quarters—of all procedures performed by private doctors under contract to INAMPS were postcesarean operations. Because a previous cesarean section is considered an indication for sterilization under the terms of the Brazilian Medical Ethics Code, it has been reported that abnormally high proportions of Brazilian women are being delivered by this method in order to become administratively eligible for sterilization.[24]

All but three percent of sterilized women said they had used some reversible contraceptive method before having the operation. As might be expected, by far the largest proportion had used the pill. Finally, 61 percent of sterilized women said they wanted the procedure to avoid having any more children, 24 percent gave health problems as a reason, and six percent mentioned inability to take the pill. The reasons for becoming sterilized appear to have changed in recent years. Among women who were sterilized 10 or more years before the survey, the same proportion (44 percent) said it was for fertility regulation and for health reasons, whereas among those sterilized less than two years before, 68 percent cited the need for fertility regulation and only 19 percent mentioned health problems.

One disturbing finding is that 15 percent of sterilized women said they wanted to have another child in the future, and 11 percent believed themselves capable of doing so. This finding suggests that some women changed their mind about childbearing after becoming sterilized, had a poor understanding of the implications of their decision to be sterilized, or were poorly counseled before the operation.

Data were collected on women's lifetime history of spontaneous and induced abortions. (Access to legal abortion is highly restricted in Brazil—permitted only to save the woman's life or in cases of rape—and so the total number of abortions reported is probably an undercount.) In all, 32 percent of women had experienced at least one miscarriage or induced abortion, and 17 percent reported they had had an induced abortion. Among women who had ever had an induced abortion, the average number they had had was 2.1. When asked why they had had an induced abortion, 29 percent of women cited economic reasons, 20 percent said they had not wanted a child at that time, a further 16 percent said they had not wanted any more children ever, 11 percent cited marital instability, nine percent said they had not been married and the remainder mentioned health or other problems.

Table 6 summarizes the most recent experience of the 305 women who reported having had an induced abortion. Two-thirds of the women who had had an induced abortion were in their 30s and 40s at the time of the interview. More than six out of 10 women said they had not been using any contraceptive method when they became pregnant. Two out of three abortions were performed by doctors, and six out of 10 were carried out by instrumental evacuation. If a traditional midwife performed the operation, she most commonly would insert a catheter into the uterus to induce the abortion. A small proportion of the procedures involved such potentially dangerous techniques as the insertion of twigs or knitting needles. One in five women experienced complications, and of these cases, one in seven required hospitalization (not shown). The technique most strongly related to the likelihood of complication was the insertion of a catheter.

Table 6. Percentage distribution of low-income women who have ever had an induced abortion, by various characteristics

Characteristic	% (N=305)
Gestation (in mos.)	
1	22.9
2–3	63.3
4–6	8.9
Unknown	4.9
Age at interview	
≤19	3.9
20–29	29.5
30–39	35.4
≥40	31.1
Method used before unwanted pregnancy	
Pill	21.3
Traditional method	5.6
Other	6.9
None	62.3
Unknown	3.9
Practitioner	
Physician	65.5
Traditional midwife	9.8
Self-induced	18.0
Other and unknown	6.6
Location	
Hospital	6.9
Clinic	58.0
Traditional midwife's home	8.2
Woman's home	22.0
Other	4.9
Type of procedure	
Instrumental evacuation	62.1
Medication	13.3
Catheter insertion	11.0
Other	9.6
Unknown	4.0
Complication	
Yes	22.3
No	73.8
Unknown	3.9
Total	100.0

Conclusions

The findings from the 1984–1985 survey show relatively high levels of contraceptive use among the residents of seven slum communities in Rio de Janeiro; nearly one-half of all respondents and three-quarters of those at risk of pregnancy were practicing family planning. What is more, the leading methods used were generally the most highly effective—the pill and female sterilization. This is an impressive finding, given that Brazil had no national family planning program at the time of the survey. However, it is notable that women in the favelas were using very few methods other than the pill and sterilization to regulate their childbearing, probably because access to other methods was limited.

Because both the pill and sterilization are unrelated to coitus and their correct use is not dependent on a woman's knowledge of her body or cooperation from her partner, these methods are probably more attractive than others to women in Brazil who do not have doctors or family planning counselors with whom to discuss contraceptive matters, or to women who are unused to discussing birth control with their husbands or boyfriends.

The high level of sterilization found among women living in the favelas of Rio (as among all women in Brazil) is striking. One-third of all contraceptive use among married women was accounted for by sterilization, as was one-half of use among all women older than 34. Nearly one-half of sterilized women had had the operation before they were 30, and most of the procedures had been performed subsequent to a cesarean delivery. Almost one-third of sterilized women had had fewer than three live births. It appears, therefore, that sterilization has changed from being a method of last resort for women who have exceeded their desired family size to being a preferred means of fertility control among women of relatively low parity.

This trend would not be problematic if young women had ample access to reversible methods other than the pill and a clear understanding of the implications of becoming sterilized. It is difficult to assess from the present findings how much of the high demand for sterilization arises from the perceived inadequacies of available reversible methods (mostly the pill and the condom) and how much is generated by the medical services available to poor women. More troubling still is the finding that over one-half of women using the pill reported medical conditions that are usually contraindications to pill use. In addition, a certain proportion of women who chose the pill use the method incorrectly.

The highest level of nonuse among women exposed to the risk of pregnancy was among those over the age of 40. Most of these women were poor candidates for the pill (because of health problems or because they smoked), yet very few appeared to know of suitable alternatives other than sterilization. In addition, one-third of teenagers at risk of pregnancy were not practicing birth control. In the absence of specialized family planning services for younger and older urban women, teenagers are unlikely to come into contact with health professionals until they become pregnant for the first time, and older women may not be reached until they have suffered a serious health problem, such as a complicated delivery or experienced an unwanted pregnancy.

The study underlines the need for a family planning program that offers the full range of modern methods and at the same time provides information about each method and its use, side effects, effectiveness and contraindications to enable low-income women to make a more informed choice. Consequently, the program that began at Sinval Germano Filho in 1987 places great emphasis on educational activities. Every woman attending the center participates in two information sessions before being referred to a doctor, at which time her choice is fully discussed and the most suitable method prescribed. Discussion groups aimed at attracting specific target populations, such as adolescents, have been formed and these cover a broad range of topics, especially reproductive health. During these sessions, teenagers identified as in need of family planning care are encouraged to use the program. Older women using the health center are also informed about the program, and their participation is further encouraged by the community health workers.

To date, over 400 women are registered in the program. The most widely used method among participants is the pill (31 percent of all use), although significant proportions are using the IUD and the diaphragm (39 percent). Nonetheless, demand greatly exceeds the service capability. Thus, in order to maintain the high standards of quality the program offers, only women residing within the catchment area are eligible to use the center, and even for these women, the average waiting time for the first interview is about one month.

References

1. A. A. Camarano, K. Beltrão and R. Neupert, *Século XXI: A Quantas Andará a População Brasileira?* Instituto de Planejamento Economico e Social and Instituto de Planejamento, Brasília, Feb. 1989.

2. C. C. S. Simões and L. A. P. Oliveira, *Perfil Estatístico de Crianças e Mães no Brasil—A Situação da Fecundidade: Determinantes Gerais e Características da Transição Recente,* Instituto Brasileiro de Geografía e Estatística, Rio de Janeiro, 1988; and Sociedade Civil Bem-Estar Familiar no Brasil (BEMFAM) and Instituto para Desenvolvimento de Recursos, *Pesquisa Nacional Sobre Saúde Materno-Infantil e Planejamento Familiar,* Rio de Janeiro, 1987, p. 26.

3. L. R. Wong and J. C. Oliveira, "Niveis e Diferências de Fecundidade para o Brasil Segundo, Dados do Censo de 1980 e do PNAD de 1984," paper presented at the Fourth National Conference of the Asociação Brasileira de Estudos Populacionais, Aguas de São Pedro, São Paulo, 1985.

4. BEMFAM, *Pesquisa Sobre Saúde Materno-Infantil e Planejamento Familiar*—São Paulo 1978; Piauí 1979 and 1982; Rio Grande do Norte 1980; Bahía 1980; Região Sul 1981; Amazonas 1982; and ——, 1987, op. cit. (see reference 2).

5. Special tabulations from the tape of the 1986 Demographic and Health Survey (DHS) in Brazil.

6. M. H. Henriques et al., *Adolescentes de Hoje, Pais do Amanhã,* The Alan Guttmacher Institute, New York, 1989.

7. Special tabulations from the tape of the 1986 DHS in Brazil.

8. Ibid.

9. Ibid.

10. Ibid.

11. Ibid.

12. Ibid.

13. BEMFAM, 1987, op. cit. (see reference 2), Table 4.6.

14. Corporación Centro Regional de Población, Ministerio de Salud de Colombia, and Demographic and Health Surveys, Institute for Resource Development/Westinghouse, *Encuesta Nacional de Prevalencia del Uso de Anticonceptivos y Primera de Demografía y Salud, 1986,* Bogotá, 1988, Table 4.6.

15. Ibid., Table 4.11.

16. G. Ojeda, "Informe de Actividades de Servicio 1988," *Boletín de Evaluación y Estadística,* No. 52, Profamilia, Bogotá, 1989.

17. L. R. Wong and J. C. Oliveira, 1985, op. cit. (see reference 3).

18. C. C. S. Simões and L. A. P. Oliveira, 1988, op. cit. (see reference 2).

19. M. H. Henriques et al., 1989, op. cit. (see reference 6), Figure 5.7.

20. J. A. Ross, D. H. Huber and S. Hong, *Voluntary Sterilization: An International Fact Book,* Association for Voluntary Sterilization, New York, 1985.

21. J. M. Stycos, "Sterilization in Latin America: Its Past and Future," *International Family Planning Perspectives,* 10:58, 1984.

22. BEMFAM, 1987, op. cit. (see reference 2), Table 4.6.

23. Ibid., Table 6.2.

24. Ibid.

Resumen

Según una encuesta realizada entre 1984 y 1985 en los barrios bajos de Río de Janeiro, de las mujeres de 15 a 49 años sexualmente activas un siete por ciento estaban embarazadas, un cinco por ciento eran infecundas y un 20 por ciento se habían hecho esterilizar. El 68 por ciento restante eran fecundas, con 42 por ciento empleando un método anticonceptivo reversible, y 27 por ciento no estando embarazadas ni queriendo serlo, y no usando ningún método. Entre las actualmente casadas que practicaban la anticoncepción, la píldora y la esterilización femenina eran los métodos más difundidos (53 por ciento y 33 por ciento, respectivamente).

(Continued on page 28)

Who Forgets to Take the Pill? The Thai Experience

Doubts about the suitability of oral contraceptives for the rural and poorly educated masses receive little support from the experience of Thai women: Rural women report forgetting to take the pill less frequently than their urban counterparts.

By Siriwan Siriboon, Chanpen Saengtienchai and John Knodel

Summary

Rural women with modest or no education are capable of using oral contraceptives correctly and may even do so more often than educated urban women, according to the reports of 1,170 current pill users in the Thai Demographic and Health Survey who were asked whether they had forgotten to take a pill in the last month, and, if so, how many pills they had forgotten. Bivariate and multivariate analyses of pill use and background characteristics revealed that rural women, especially those working in agriculture, are less likely to forget to take a pill than are their urban counterparts. Poorly educated women are also less likely to forget to take a pill than are women with at least a secondary education, although they are more likely to forget to take three or more pills within a cycle when they do forget. Correct pill use is associated with older age, longer duration of method use and desire for no more children. Women who purchase pills from drugstores or from government sources are also more likely to forget to take them than are women who obtain them free from government outlets.

Introduction

Contraceptive prevalence has risen rapidly and fertility has fallen substantially in many, although by no means all, areas of the developing world. One specific concern about the use of family planning in these countries, however, has not been adequately explored: the ability of predominantly illiterate or poorly educated persons to practice methods that require repeated or daily actions, such as the oral contraceptive pill. To date, relatively little systematic research is available on this subject. However, evidence on the extent to which contraceptive pill users remember to take their daily dose has been recently collected in Thailand, a country in which oral contraceptives have been widely used during the last decade.

Data from the Thai Demographic and Health Survey (TDHS), conducted in 1987 by the Institute of Population Studies, Chulalongkorn University,[1] indicate that overall contraceptive prevalence in Thailand is 68 percent among currently married women aged 15–44, one of the highest levels recorded for a developing country.[2] Thirty-one percent of these users, or 20 percent of all currently married women aged 15–44, rely on oral contraceptives. The prevalence of pill use has remained relatively constant for approximately a decade, after rising sharply from four percent at the start of the 1970s. During much of this time, the pill was the most prevalent method, being overtaken only recently by female sterilization, which is now used by 22 percent of currently married women. The pill remains the most common method of ever-use, with more than half (55 percent) of ever-married women aged 15–49 in the TDHS sample reporting having used it at some time.

This article is based on responses to two special questions added to the TDHS: All current users were asked whether they had forgotten to take a pill during the last month, and, if so, how many times they had forgotten. The analysis focuses on the extent of forgetting to take the pill as reported by current users and examines the associations between forgetting and various demographic and social characteristics of the users, their supply source, and whether or not the pills were provided free.

Methods

The TDHS is based on interviews of a nationally representative sample of 6,775 married women of reproductive age. The sample was designed to provide independent estimates for the four major regions of Thailand and the Bangkok Metropolitan Area, as well as for the rural and urban sectors collectively. Nationally representative results can be obtained by applying appropriate weights, and all results in this study are based on weighted calculations.

Responses from the 1,170 current pill users who were asked whether they had forgotten to take a pill during the previous month were divided into two categories: those who had forgotten to take the pill at least once and those who had forgotten three or more times. The first measure, the percentage of users who had forgotten to take a pill at least once during the last month, indicates the extent to which there is any deviation from full compliance with instructions to take the pill daily. Given that the likelihood for possible method failure increases with the number of pills forgotten within a monthly cycle, the second measure, the percentage who had forgotten at least three times, serves as an indicator of the extent of relatively serious noncompliance. Presumably, women who forget three or more times during a cycle are at significant risk of an undesired pregnancy because of incorrect method use.[3] For this reason, the second measure is of greater substantive interest than the first. (Users of all methods were asked if they had regularly used any other method during the previous month; only two percent of pill users said they had used another method, and there was very little difference between those who had forgotten one or more pills and those who had not forgotten at all.)

Cross-tabular results show the bivariate relationship between forgetting to take the pill and a number of background charac-

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Table 1. Percentage of oral contraceptive users who forgot to take the pill at least once and at least three times during the previous month and percentage distribution of the number of pills forgotten among those who forgot, by background characteristics

Characteristics	N	Forgot at least once	Forgot at least three times	Number of times pill forgotten among women who forgot at least once			
				1	2	≥3	Total
Total	**1,170**	**24.4**	**9.0**	**31**	**32**	**37**	**100**
Residence							
Rural	748	23.2	8.3	32	32	36	100
Less developed	642	23.2	8.2	33	32	35	100
Semiurban	106	22.9	9.2	28	32	40	100
Urban	422	29.9	12.2	27	32	41	100
Provincial	179	29.8	11.4	22	40	38	100
Bangkok	243	29.9	12.6	30	28	43	100
Woman's work status							
Agricultural	363	22.6	6.6	36	35	26	100
Nonagricultural	402	25.9	9.9	32	30	38	100
Not working	403	24.6	10.5	26	32	43	100
Education							
0–3	120	20.0	9.9	(40)	(10)	(50)	100
4–6[*]	852	23.8	8.9	28	34	38	100
Secondary or above	198	33.6	9.0	40	33	27	100
Age							
15–19	79	38.1	14.4	(29)	(33)	(38)	100
20–24	275	28.5	8.2	27	44	29	100
25–29	337	24.4	7.1	35	35	29	100
30–34	208	24.9	12.0	35	17	48	100
≥35	271	16.4	8.1	(26)	(22)	(52)	100
Desire for more children							
Want more or unsure	551	30.6	11.1	31	33	36	100
Want no more	608	19.0	6.9	32	31	37	100
Duration of pill use							
<1 year	399	28.1	12.5	29	26	45	100
1–2 years	322	29.8	8.4	29	43	28	100
≥3 years	442	17.4	6.5	32	29	38	100

[*] Includes women schooled under the old system in which primary education extended through seven years.

Notes: N refers to the unweighted number of cases. for some characteristics, the number of cases sums to less than a total of 1,170 because of missing information. In this and the next table, the results shown are based on weighted calculations. Results based on 20–49 unweighted cases are enclosed in parentheses.

teristics of the respondent that might be associated with correct use of oral contraceptives. The bivariate associations of the two measures of forgetting with the source of supply and with whether or not the pills were provided free are also shown. Finally, the association between the two measures of forgetting and a selection of the background and supply variables are explored within a multivariate framework based on logit regression analysis. The dependent variables are coded as zero for not forgetting and one for forgetting either at least once or three or more times. These results are presented in the form of adjusted odds ratios.

There are two important limitations to the present analysis. First, remembering to take the pill on a daily basis during the monthly cycle is only one of several important aspects involved in correct pill usage. For example, it is important to start a new cycle on the correct day and, if one day is missed, to take two pills the following day. A recent intensive study of pill use based on women in a local area of Colombia illustrates that the extent of errors in these other components of compliance are not trivial, especially with respect to incorrect cycle-to-cycle transitions.[4] Information on aspects of noncompliance other than forgetting to take the pill daily, however, is not available from the TDHS and thus cannot be investigated in the present study. The second limitation is that the information on forgetting to take the pill is self-reported and thus depends not only on accurate recollection of the month's events[*] but also on the respondent's understanding of which days the pill should be taken. If the woman mistakenly believes that pills should only be taken on days when intercourse occurs, for example, the extent of incorrect usage would be underreported. Unfortunately, little is known about the prevalence of various incorrect beliefs concerning proper pill usage in Thailand.

Despite these limitations, the TDHS data on pill compliance are of considerable interest and they appear to be unique. They refer to a large nationally representative sample of a major developing country, and a literature review has found no other nationally representative studies of oral contraceptive compliance in a developed or developing country.[5] In addition, Thailand is a particularly interesting case, since oral contraceptive use has been relatively high since the late 1970s. Moreover, the TDHS data are rich in information on a variety of factors that may significantly influence patterns of pill use, which enhances their value in investigating oral contraceptive compliance.

Results

Table 1 summarizes the extent to which users reported forgetting to take the pill, according to a variety of background characteristics. In addition to the two measures of forgetting (i.e., forgetting to take a pill at least once vs. three or more times), the table shows the percentage distribution of the number of times a pill was forgotten among those who forgot to take a pill at least one time. Almost one-fourth of all users reported forgetting to take at least one pill during the previous month. Among those who reported that they had forgotten at least once, slightly less than one-third each had forgotten once or twice, and slightly more than one-third had forgotten three or more times. Thus, overall, about nine percent of current pill users can be considered to seriously deviate from correct daily use during a single cycle. (Only one current pill user did not indicate whether she had forgotten to take a pill, and was excluded from the analysis; three others could not remember how many pills they had forgotten, and were treated as though they had forgotten at least three pills.)

Given the concern that rural and poorly educated women might have greater difficulty taking modern medicine correctly, the patterns of pill use associated with rural-urban residence and education are of particular interest. The TDHS results indicate that rural women are less likely to report that they forgot to take the pill during the previous month than are urban women. Moreover, when attention is focused on forgetting to take the pill three or more times, a consistent inverse association is observed between forgetting and the level of urbanization: Women in the less developed rural areas are least likely to forget, while women in Bangkok are most likely to forget.

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[*] While it is not possible to assess directly the accuracy with which respondents were able to recall whether or not they had forgotten any pills and the number of pills forgotten, it is encouraging that virtually all the women asked were able to provide concrete responses. This was not the case for all questions in the survey. For example, more than half of the women interviewed gave responses coded as "don't know" when asked when a woman was most susceptible to becoming pregnant during her monthly cycle.

A background variable related to rural-urban residence is the type of work done by women. Based on information collected in the TDHS, it is possible to determine whether or not a woman was working and whether or not her work was agricultural. The results indicate that women engaged in agriculture reported forgetting to take the pill least frequently. In addition, there were only minor differences between women who worked in nonagricultural jobs and those who did not work.

The association between education and forgetting to take the pill also fails to show the expected relationship. Women with less than a primary education (i.e., those with 0–3 years of schooling) were the least likely to report forgetting to take the pill at least once, while women with a secondary or higher education were the most likely to do so. However, among all those who did forget, women with the least education were most likely to forget three or more times.

In general, there is a roughly inverse association between the percentage of women forgetting to take the pill at least once and the age of the user. The association between age and forgetting to take the pill at least three times is more irregular, although the youngest women still reported the highest levels. The expressed desire for no more children shows a clear association with correct pill use; among women who said they wanted no more children, the percentage who reported forgetting to take the pill was noticeably lower than among those who said they wanted more children or were uncertain. Quite plausibly, women who know they do not want any more children are more strongly motivated to practice contraception and pay greater attention to using the pill correctly. Finally, women with longer durations of pill use reported taking the pill more regularly than did women with shorter durations of use. Taking a pill daily may become a matter of habit for women who have been using oral contraceptives for a long period, whereas women with less experience may forget more easily because they have not yet become fully accustomed to the method. Alternatively, the association with duration of use may arise because women who frequently forget to take the pill switch to other methods or become pregnant.[6] Those using the pill for longer durations are thus likely to be self-selected for correct usage patterns.

In Thailand, oral contraceptives are available through a variety of sources. Since the early 1970s, government policy has been to allow trained nurses and auxiliary midwives to distribute birth control pills. As a result, all government health outlets, including the local commune health stations, provide oral contraceptives. Moreover, since 1976, all government outlets are officially supposed to provide the pill free of charge. More recently, village health volunteers have been permitted to resupply pills at a modest fee, thus further extending their availability in rural areas. Private family planning organizations, most notably the Population and Development Association, maintain a network of village-based agents as well as numerous clinics where pills are sold at modest prices. Oral contraceptives are carried by virtually every drugstore and can be purchased over the counter without a prescription.

A number of surveys conducted during the last decade in Thailand show that the majority of oral contraceptive users (among married women) obtain their pill cycles through government outlets. According to the TDHS, government sources, primarily through local health stations, accounted for 70 percent of the most recently supplied cycles.[7] In addition, 59 percent of respondents who indicated that they had obtained their most recent cycle from a government source reported that the pills had been provided free of charge. Of those who had been charged by a government outlet, the average cost was only 4.5 baht (U.S. $0.18), well below the commercial price. In the private sector, the drugstore is the most important source, accounting for 21 percent of the most recently provided cycles nationally and 61 percent of the cycles in urban areas.

Table 2. Percentage of oral contraceptive users who forgot to take the pill at least once and at least three times during the previous month, by supply source and provision status

Source and status	N	Forgot at least once	Forgot at least three times
Source			
Government hospital	119	21.8	7.7
Government health center	542	23.6	7.3
Government volunteers	47	(17.3)	(10.5)
Private hospital/clinic	72	22.2	12.9
Drugstore	339	30.1	13.6
Shop	28	(28.0)	(6.3)
Provision status			
Government, free	424	20.6	6.9
Government, not free	278	26.0	8.7
Private	439	28.3	12.6

As Table 2 shows, relatively pronounced differences are apparent between the extent of forgetting to take the pill and both the source of supply and whether or not the pill was provided free. Oral contraceptive users who had purchased pills from drugstores were the most likely to report forgetting to take a pill, both when measured in terms of forgetting at least one time and forgetting three or more times. Women who had obtained their last cycle at a private hospital or clinic were less likely than other women to forget to take a pill at least once, but were more likely to forget three or more times. Generally, women who had obtained oral contraceptives from government outlets reported forgetting to take their daily dose no more frequently than did women who had obtained them through a private-sector source. Moreover, women who had received their supply free from the government had forgotten less often than those who had been required to pay.

Given that many of the independent variables associated with forgetting to take the pill are themselves interrelated, it is useful to examine these associations within a multivariate framework to assess the influence of each particular variable, adjusting for the influence of the others. As mentioned above, we employ logit regression analysis for this purpose. Both forgetting at least once and forgetting three or more times are examined in the context of three models. The first model takes into account background characteristics but excludes supply source and free provision status. The next two models include each of these two additional variables in turn. Supply source and free provision status are not included together in the same model since they overlap with each other in their categorizations. Conducting the analysis in this manner permits assessing the extent to which incorporating supply source or free provision status reduces the observed associations between forgetting and the other background variables being examined.

Table 3. Odds ratios of forgetting to take the pill at least once and three or more times during the previous month, by selected characteristics, according to whether unadjusted or adjusted by logit regression

Characteristics	Forgetting at least once				Forgetting at least three times			
	Unadjusted	Adjusted			Unadjusted	Adjusted		
		a	b	c		a	b	c
Residence								
Rural†	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Urban	1.41	1.25	1.21	1.23	1.50	1.69*	1.36	1.36
Education								
0–3 years	0.80	0.92	0.97	1.00	1.09	1.18	1.22	1.24
4–6 years†	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Secondary or above	1.62	1.29	1.29	1.27	1.03	0.71	0.67	0.66
Duration of use								
< 3 years†	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
≥3 years	0.52	0.66*	0.67*	0.63*	0.63	0.66	0.63	0.61*
Desire for children								
Want more/uncertain†	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Want no more	0.53	0.66*	0.67*	0.63*	0.64	0.61*	0.60*	0.60*
Age								
15–19	1.76	1.37	1.43	1.40	1.74	1.16	1.13	1.10
20–34†	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
≥35	0.56	0.89	0.85	0.86	1.03	1.60	1.59	1.68
Source								
Government outlet†	1.00	na	1.00	na	1.00	na	1.00	na
Private hospital/clinic	0.91	na	0.77	na	1.55	na	1.56	na
Drugstore	1.43	na	1.19	na	1.78	na	1.66*	na
Provision status								
Government, free†	1.00	na	na	1.00	1.00	na	na	1.00
Government, not free	1.36	na	na	1.36	1.39	na	na	1.57
Private sector	1.52	na	na	1.25	1.99	na	na	1.99*

*p<0.05 (using a two-tailed test) †Reference category.

Notes: a = adjusted for background characteristics only; b = adjusted for background characteristics and source of supply; and c = adjusted for background characteristics and provision status. The adjusted odds ratios are based on slightly fewer cases than the unadjusted ratios since cases with missing values for any of the independent variables included in the particular regression equation are excluded; na = not applicable.

The background characteristics chosen for inclusion in the regression analyses are residence, education, duration of use, desire for more children and age (Table 3). Since little difference is apparent in Table 1 between subcategories within the rural and urban groupings, residence is treated in the regression analysis as a simple rural-urban dichotomy. For similar reasons, durations of use of less than one year and 1–2 years are combined into a single category as are the ages 20–34. Women's work status is not included both because it overlaps with residence and because it shows a less pronounced association with forgetting to take the pill than does residence. With respect to source of supply, shops have been combined with drugstores, and government outlets of all kinds have been grouped together. All independent variables included in the regression analysis were treated as categorical and entered into the regression as a series of dummy variables.

Table 3 presents adjusted odds ratios calculated from multivariate logit regression with respect to the two indices of forgetting to take the pill; unadjusted odds ratios based on the bivariate results are also shown for comparison. In the context of the present study, odds refers to the probability of forgetting to take the pill (at least once or three or more times) divided by the probability of not forgetting. Odds ratios above 1.00 indicate a higher degree of forgetting for women in the category under question than for women in the reference category, and odds ratios below 1.00 indicate a lower degree of forgetting for women in the category under question compared with those in the reference category. Adjusted odds ratios represent the result after taking into account the influence of the other variables included in the table column. For example, the adjusted odds ratio of 1.29 in the second column for women with a secondary or higher education with respect to forgetting to take the pill at least once means that the odds of forgetting are 29 percent higher for such women than for those with 4–6 years of schooling (the reference category) after controlling for all other variables for which values are given in that column.

The logistic regression results indicate that urban as opposed to rural residence continues to be associated with an increased chance of forgetting to take the pill even after other influences are taken into account. The results are statistically significant, however, only for forgetting three or more times and only when the source of supply and provision status are not included. Introducing either of these factors into the analysis has little impact on the odds that urban residents will forget at least once, but it does lower the odds considerably with respect to forgetting three or more times. This would suggest that part of the rural-urban difference in forgetting may result from differences in contraceptive sources and the type of service provided in each area.

The association between education and forgetting to take the pill is more complex, and the direction of the relationship differs according to whether the analysis focuses on forgetting at least once or forgetting three or more times. With respect to forgetting at least once, there is little difference between women with less than a complete primary education (0–3 years of schooling) and those with a complete primary education (4–6 years, the reference category). However, women with a secondary or higher education are more likely to forget at least once even when other possible influences are taken into account. In contrast, the pattern of odds ratios relating to forgetting three or more times indicates an inverse association—the least educated women are most likely to forget, and women with a secondary or higher education are least likely to forget; however, the associations between education and forgetting to take the pill are not statistically significant. Introduction of the source of supply or free provision status into the analysis has little impact on these associations.

When other variables are taken into account, both duration of use and desire for more children continue to show relatively strong associations with the extent to which women forget to take pills. Moreover, most of these associations are statistically significant. Compared with other women, those who have used the pill for three or more years and those who want no more children are less likely to forget either at least once or three or more times.

After controlling for other variables, younger users (15–19 years) remain more likely to forget to take the pill at least once than women of intermediate ages (20–34 years) but they show only marginally higher odds ratios with respect to forgetting three or more times. Older women are less likely to forget at least once, but are more likely to forget three or more times than are intermediate-age women. Results with respect to these age variables, however, are not statistically significant.

Compared with users who are supplied by government outlets, women who obtain their pills from private hospitals or clinics are somewhat less likely to forget at least once but are more likely to forget three or more times, after adjusting for the other variables included in the analysis. Women who purchased their last pill cycle from a drugstore are slightly more likely to forget at least once but are clearly more likely to forget three or more times. The latter association is statistically significant. Increased odds of forgetting to take the pill are also associated with purchasing pills either from a government outlet or from the private sector as opposed to obtaining them free from government outlets. However, the increased odds of forgetting to take the pill are statistically significant only for women who purchased pills from the private sector and forgot to take them three or more times.

Discussion

Approximately one-fourth of pill users sampled in the TDHS reported forgetting to take at least one pill during the previous month and nine percent reported forgetting three or more times. Without comparable data from oral contraceptive users in other countries, no assessment can be made as to whether these levels of forgetting are high or low compared with those of more developed countries or the remainder of the developing world. Doubts about the suitability of oral contraceptives for the rural and poorly educated masses of Third World women receive little support from the experience of Thai women, however. Comparisons within the Thai population reveal that rural women report forgetting to take the pill less frequently than their urban counterparts. Moreover, women with less than a complete primary education or with just primary schooling are less likely to forget at least once than are better educated women (although they are more likely to forget three or more times).

The source of supply as well as whether the pill is provided free of charge as stipulated for government outlets is also associated with the extent of forgetting. Women who obtained their last cycle from a government outlet, especially if the cycle is provided free, are less likely to forget than are other users, whereas those who purchased their pills from drugstores are most likely to forget.

While direct evidence to explain these findings is not available from the TDHS, several plausible reasons for the observed patterns can be suggested. The variation in oral contraceptive use compliance with respect to the source of supply and the provision status may stem from differences in the extent of instruction and supervision provided. Women who obtain pills as new acceptors from government health personnel are likely to be informed about correct usage and the importance of not forgetting to take the pills. In contrast, women who purchase oral contraceptives in shops or drugstores are unlikely to receive such advice unless they specifically request it, and even then the information given may be incomplete or incorrect. A recent study of pill compliance in Thailand confirms that women obtaining their pills from drugstores are less likely to be advised on various aspects of use.[8] In addition, there is no certainty that pill packets sold in the drugstores come with written instructions, since packets are sometimes sold without outside packaging.

A potential explanation for the association between free provision status and forgetting also relates to the extent of instruction received concerning proper pill usage. Officially, oral contraceptives are to be provided free to all clients through government outlets; therefore, providers who levy charges at these outlets despite the policy may be less client-oriented. If so, clients at such centers might also tend to receive less instruction or supervision with respect to oral contraceptive use compared with clients of centers where the pill is provided free. Previous analysis of the TDHS data indicates that there is little apparent association between a client's ability to pay and whether or not she is charged at a government facility, suggesting that such policy is geared to the interests of local health center staff only.[9] In any event, the results are clearly contrary to any idea that women value pills less and thus are more careless in their use if the pills are provided free than if there is a charge, a proposition sometimes put forth by opponents of the free pill policy.[10]

Rural women depend on government outlets for their supply of pills in substantially greater proportions than urban women, and urban women often purchase their supplies from a drugstore. That may account in part for the more regular use found among rural users. Other factors not considered in this study, however, may also be influential. For example, rural life styles may be characterized by greater routine than urban ones, thereby facilitating other routine behaviors such as daily ingestion of the pill. In contrast, the more hectic pace and greater variation in daily activities experienced by urban women may make them more likely to forget to take the pill occasionally. To some extent, better educated women may also lead less routine lives and thus find it more difficult to remember to take the pill faithfully every day. In any event, oral contraceptives appear to be at least as appropriate a method for the rural and modestly educated majority of Thai women as for their better educated or urban counterparts.

References

1. N. Chayovan, P. Kamnuansilpa and J. Knodel, *Thailand Demographic and Health Survey 1987*, Institute of Population Studies, Chulalongkorn University, Bangkok, 1988.

2. Ibid.; and J. Knodel, A. Chamratrithirong and N. Debavalya, *Thailand's Reproductive Revolution*, University of Wisconsin Press, Madison, 1987.

3. I. Fraser and R. Jansen, "Why Do Inadvertent Pregnancies Occur in Oral Contraceptive Users?" *Contraception*, **27**:531, 1983.

4. L. Potter et al., "Oral Contraceptive Compliance in Rural Colombia: Knowledge of Users and Providers," *International Family Planning Perspectives*, **14**:27, 1988.

5. L. Potter, personal communication, Sept. 22, 1989.

6. I. Fraser and R. Jansen, 1983, op. cit. (see ref. 3).

7. S. Siriboon and C. Saengtienchai, "Oral Contraceptive Use," *Health and Population Studies Based on the 1987 Thailand Demographic and Health Survey*, Institute of Population Studies, Chulalongkorn University, Bangkok, Thailand, 1989.

8. "Pill Compliance Among Rural and Urban Pill Users," mimeographed report issued by Research and Development Center, Mahidol University; Family Health Division, Ministry of Public Health and Thailand Fertility Research Association, Bangkok, 1989.

9. S. Siriboon and C. Saengtienchai, 1989, op. cit. (see reference 7).

10. J. Knodel, T. Bennett and S. Panadilok, "Do Free Pills Make a Difference? Thailand's Experience," *International Family Planning Perspectives*, **10**:93, 1984.

Resumen

En la Encuesta Demográfica y de Salud de Tailandia se les preguntó a 1.170 usuarias de la píldora si habían olvidado alguna vez de tomarla durante el último mes, y si así fue, cuántas habían olvidado. Las respuestas indican que las mujeres rurales con poca o ninguna instrucción sí pueden ser usuarias idóneas de la píldora y aún pueden usar el método más correctamente que las urbanas con más instrucción. Los análisis bivariables y multivariables del uso y las características de las usua-

rias revelaron que las rurales, especialmente las que trabajan en la agricultura, tienen menos probabilidades de olvidarse de tomar una píldora que las urbanas. Además, es menos probable que las con poca instrucción se olviden de tomar una píldora que las mujeres con por lo menos educación secundaria, aunque cuando las primeras sí olvidan, es más probable que se olviden de tomar tres o más píldoras por ciclo. El uso correcto de la píldora está asociado con la mayor edad, el tiempo más largo de uso y el deseo de no tener más hijos. También, es más probable que las mujeres que compran la píldora en farmacias o en fuentes de aprovisionamiento del gobierno se olviden de tomarla que las que la obtiene gratis en el programa del gobierno.

Résumé

D'après les rapports de 1.170 participantes à l'étude démographique et de santé en Thaïlande qui utilisent la pilule régulièrement et à qui l'on a demandé si elles avaient oublié de la prendre le mois précédent, et, dans l'affirmative, combien de pilules elles avaient oublié, les femmes peu ou non instruites des zones rurales sont autant, et si ce n'est plus susceptibles d'utiliser les contraceptifs oraux correctement et de façon continue que ne le sont les femmes instruites des zones urbaines. Des analyses à deux et plusieurs variables de l'utilisation de la pilule et des antécédents ont révélé que les femmes des zones rurales, surtout celles travaillant dans le secteur agricole, sont moins susceptibles d'oublier de prendre la pilule que ne le sont leurs homologues des zones urbaines. Les femmes peu instruites sont aussi moins susceptibles d'oublier de prendre la pilule que ne le sont les femmes ayant au moins une instruction secondaire, bien qu'elles soient plus susceptibles d'oublier de prendre au moins trois pilules. L'utilisation correcte de la pilule était associée à un âge plus avancé, à une durée plus longue de pratique contraceptive et au désir de ne plus avoir d'enfants. Les femmes qui achètent les pilules auprès de pharmacies ou de sources gouvernementales sont aussi plus susceptibles d'oublier de les prendre que les femmes qui se les procurent gratuitement auprès de centres gouvernementaux.

Contraceptive Failure . . .

(Continued from page 15)

peut être considérée comme une méthode contraceptive idéale pour le couple type qui est susceptible de se conformer moins que le couple qui se porte volontaire pour un essai clinique. La probabilité d'une grossesse accidentelle est la plus élevée lors de la violation de l'une quelconque des trois règles les plus importantes: pas de rapports durant les jours de mucosités, durant les trois jours suivant celui de la fécondité maximale ou durant les moments de stress. Les personnes ayant une attitude négative à l'égard des règles sont plus susceptibles de prendre des risques, y compris des risques importants. Les personnes qui s'en tirent en prenant un risque (à savoir celles qui ne sont pas enceintes) sont très susceptibles de prendre des risques à nouveau. Etant donné que la violation des règles les plus importantes comporte un risque de grossesse de 28 pour cent par cycle, les personnes susceptibles de prendre des risques devraient être conseillées quant aux conséquences probables.

Family Planning: Poor Women in Rio

(Continued from page 22)

Los niveles bastante altos de esterilización y uso de píldora entre las mujeres de bajos ingresos arrojados por la encuesta resultan sorprendentes. El conocimiento y acceso a otros métodos son, sin embargo, limitados. Por ejemplo, el 15 por ciento de las esterilizadas dijeron desear otro hijo en el futuro y el 11 por ciento se creía en condiciones de tenerlo. Además, la encuesta estableció que el 43 por ciento de las actuales usuarias de píldora también fumaban y que el cinco por ciento eran, además de fumadoras, mayores de 45 años. El 50 por ciento de las usuarias de píldora dijeron haber padecido de contraindicantes como hipertensión, problemas cardíacos, diabetes, desórdenes renales o várices. Solo el 42 por ciento había consultado a un médico antes de usar anticonceptivos orales, los cuales se expenden sin receta.

Résumé

Une étude effectuée en 1984–1985 auprès de sept communautés défavorisées de Rio de Janeiro a révélé que sept pour cent des femmes sexuellement actives et âgées de 15 à 49 ans étaient enceintes, 20 pour cent avaient été stérilisées par méthodes contraceptives, et cinq pour cent étaient stériles. Les autres femmes, représentant 68 pour cent de la population étudiée, étaient fécondes: environ 42 pour cent avaient recours à une méthode contraceptive réversible et 27 pour cent n'étaient pas enceintes ou ne tentaient pas de le devenir et n'utilisaient pas de méthodes contraceptives. La pilule et la stérilisation féminine étaient les deux principales méthodes contraceptives parmi les femmes alors mariées pratiquant la contraception, étant utilisées, respectivement, par 53 pour cent et 33 pour cent.

Les niveaux relativement élevés de stérilisation et d'utilisation de la pilule relevés dans l'étude parmi les femmes à faible revenu sont saisissants. Cependant, la connaissance d'autres méthodes et l'accès à ces méthodes sont limités, et on a donc constaté que certaines femmes utilisaient des méthodes inappropriées. Ainsi, 15 pour cent des femmes stérilisées ont déclaré vouloir un autre enfant dans l'avenir, et 11 pour cent se croyaient capables de le faire. L'étude a aussi révélé que 43 pour cent des utilisatrices actuelles de la pilule fumaient, et cinq pour cent étaient des fumeuses de plus de 45 ans. Cinquante pour cent des utilisatrices de la pilule ont signalé souffrir de contre-indications à l'utilisation de la pilule telles que l'hypertension, problèmes cardiaques, diabète, troubles rénaux ou varices. Seulement 42 pour cent des femmes avaient consulté un médecin avant d'utiliser des contraceptifs oraux, lesquels sont disponibles sans ordonnance.

DIGEST

Tubal Ligation Appears to Be Gaining Greater Acceptance Among Both Women and Men in Kenya

Kenyan women who have undergone tubal ligation are generally very pleased with the method, and many would like to discuss it with other women, according to analyses of 32 focus groups conducted in Kenya.[1] Husbands of women who have been sterilized also are favorably disposed toward tubal ligation, but are less willing to talk about it with others. To avoid criticism from the extended family, most men and roughly half of the women did not tell their parents about their decision. Both men and women cite economic constraints as the primary reason for limiting family size, and most couples using reversible methods say they will likely use tubal ligation in the future. However, although tubal ligation appears to have gained acceptance among family planning users in Kenya, vasectomy is viewed very negatively by both men and women.

Eight focus groups were held in each of four Kenyan districts—Kisii, Nyeri, Eldoret and Mombasa—chosen as having populations likely to have favorable attitudes toward tubal ligation (based on the availability and use of local sterilization services). Each focus group had 6–12 participants. In each district, two focus groups consisted of women who had undergone tubal ligation; two others were made up of husbands of (other) women who had undergone tubal ligation; one group comprised women with at least five children who had used a reversible method during the previous 12 months; another was made up of women 40 or younger with at least five children who were not using a method; and two groups consisted of husbands of women comparable to those in the last two groups.

Most couples who had chosen tubal ligation as a method had previously used a reversible method, such as the pill, the IUD or injectables. Their primary motivation for sterilization was economic: Financial constraints, lack of land, expenses for children's education and daily necessities were mentioned most often. Other reasons cited for choosing tubal ligation were the woman's health and her dissatisfaction with other methods. Sometimes the husband had convinced his wife to undergo the operation; in other cases, the wife had persuaded her husband of its desirability. Family planning field workers were cited by many as having provided important information about the procedure. Some couples had waited a few years after first considering tubal ligation, having one or two additional children before finally deciding to have the operation.

None of the acceptors expressed any regret over having been sterilized, and most said they felt happier and healthier since the operation. Many women reported a new closeness in their relationships with their husbands, and men said their wives looked younger and healthier and were more loving.

Although a few of the women worried about the method failing at some time, most had no misconceptions about sterilization. However, some of the women said that others had warned them that they were "leaving children behind in their bodies" or that they would "become cold" (lose their sex drive). About half of the women who had had the operation said they had discussed it with members of their extended family, while most of the husbands had chosen not to. In general, the wife's family was more supportive of tubal ligation than the husband's.

Although most of the sterilized women and the husbands of such women had heard of vasectomy, they were unanimously opposed to it. Their reasons included the fear that vasectomy causes impotence, the concern that a man may later divorce, remarry and want more children and the belief that pregnancy is a woman's problem, so she should be responsible for preventing it.

Women who used reversible methods said they favored family planning because it enables them to rest between births and gives them more time to care for each child before the next is born. The most widely used method was the pill, but others used the IUD or injectables. Although a few men said that they would like to have more children, many expressed concern about the financial burden of educating those they already had. Most of the participants agreed that family size should be limited and that the ideal family would have 4–6 children.

As expected, the men and women who did not use contraceptives were less likely to see any need to limit childbearing, and they expressed distrust of reversible methods. However, nonusers seemed to accept tubal ligation as a possible method for those who do not want more children. "A couple should not waste time and government money on pills and the injection drug," said one participant. "Once they have enough children, they should use tubal ligation."

Knowledge of tubal ligation was widespread among focus-group participants. All of the women knew about it, although many had misconceptions about the operation itself. Women using reversible methods or no method generally considered tubal ligation to be an appropriate way to limit family size: Many of them knew someone who had had the procedure and were pleased with it. Most of the husbands of women using reversible methods or no method also had heard about tubal ligation and knew that it was permanent, but they did not know how it was performed. A few men knew women who had had the procedure, and they observed that these women were healthy and that their child-care burden had been lessened. One man suggested that such women could serve as motivators for others.

In contrast, both users and nonusers of

DIGEST

reversible methods were strongly opposed to vasectomy. One participant stated, "We have heard of men going for this sterilization, but do not make the mistake of talking of [promoting] this method in our community. It will spoil the whole exercise of family planning. Please only inform people that there is an operation for men, but don't encourage it."

Four obstacles to tubal ligation were identified among users and nonusers of reversible methods: the husband's opposition to this procedure or to family planning in general; fear of a change in family circumstances, such as divorce or the death of a child; the cost of the operation; and anticipated objections from the extended family. There was a consensus, however, that any decision regarding sterilization should be made by the husband and wife in private. Most participants said that if they decided in favor of tubal ligation, they would not tell their relatives.

The investigators caution that the attitudes expressed in this study are not nationally representative; just five percent of all Kenyan women have undergone tubal ligation, whereas half of the focus-group participants were either sterilization acceptors or husbands of acceptors. In addition, all participants lived in areas where tubal ligation is common and where knowledge of the procedure and positive attitudes toward it are more prevalent. Nevertheless, the results suggest that for women in Sub-Saharan Africa, sterilization can become an acceptable contraceptive method.

In comparing their results with those from a similar focus-group study conducted in Zaire,[2] the investigators point out major differences in attitudes toward tubal ligation. In Zaire, the operation was considered justified only for health reasons, whereas in Kenya, both men and women said that their main motivation was to reduce the economic burden of having a large family. In contrast to women in Zaire, Kenyan women who had been sterilized were willing to discuss their experience with other women, and method users with five or more children considered themselves to be potential candidates for tubal ligation.

The investigators attribute these differences to two factors. First, Kenya's population policy promotes smaller families, and many focus-group participants reported having heard this message on the radio or in community meetings. In Zaire, in contrast, family planning workers are trained to emphasize contraceptive use only for spacing purposes. Second, in Kenya, a woman can obtain a tubal ligation in one day and at a reasonable cost. Thus, there is easier access to sterilization than in Zaire, where the operation often requires both general anesthesia and a hospital stay.—*M. Witwer*

References

1. J. T. Bertrand et al., "Attitudes Toward Voluntary Surgical Contraception in Four Districts of Kenya," *Studies in Family Planning*, **20**:281, 1989.

2. K. Chibalonza, C. Chirhamolekwa and J. T. Bertrand, "Attitudes Toward Tubal Ligation Among Acceptors, Potential Candidates, and Husbands in Zaire," *Studies in Family Planning*, **20**:273, 1989.

Women in Botswana Use The Pill to Space Births, But Want Large Families

Levels of fertility in Botswana have fallen rapidly over the last decade, but remain high. There has been a substantial drop in the total fertility rate (TFR) and a concurrent increase in the use of modern methods of contraception. In Botswana, women's fertility desires and the TFR for the 1985–1988 period are almost identical (4.7 and 4.9, respectively). Most women want large families, but they are increasingly using contraceptives to delay their first birth and space subsequent births. Currently, 30 percent of all women practice family planning, and 60 percent of those women use the pill. These are some of the highlights of the 1988 Botswana Family Health Survey II (BFHS-II).[1]

The Republic of Botswana, formerly the Bechuanaland Protectorate, is a landlocked country bordered by the Republic of South Africa on the south and southeast, Zimbabwe on the northeast, Zambia on the north and Namibia on the west. The Kgalagadi (Kalahari) Desert covers 84 percent of Botswana's territory; as a result, 87 percent of the population lives in the eastern part of the country, where the climate is more suited to agriculture. At its current annual growth rate, Botswana's population of 1.2 million may double in less than 20 years.

In 1988, 30 percent of women of reproductive age lived in urban areas and 70 percent in rural areas, 24 percent of women had no education and 26 percent had at least some secondary education; in 1981, according to census data, 21 percent of women of reproductive age lived in urban areas and 79 percent in rural areas, 35 percent of women were uneducated and nine percent had at least some secondary education.

Fertility

The BFHS-II was carried out in 1988 among a sample of 4,368 women aged 15–49 as a sequel to the 1984 Botswana Family Health Survey (BFHS). At the time of the survey, 28 percent of the women were married and 11 percent were cohabiting. However, in Botswana, marriage and cohabitation are not good proxies for exposure to the risk of pregnancy: In 1988, the median age at first union was 24, while the median age at first sexual intercourse was just over 17. Moreover, almost half of never-married women and women formerly in a union had had sexual intercourse in the month preceding the survey. Although there was no difference in the age at which urban women and rural women first had intercourse, women with some secondary education were generally older at first intercourse than were uneducated women (17.9 vs. 16.9).

A comparison of data from the 1981 census, the BFHS and the BFHS-II suggests a substantial decrease in fertility: The TFR was 7.1 in 1981, 6.5 in 1984 and 5.0 in 1988. However, further analysis is needed to determine the accuracy of those rates. The decline appears to have occurred in all socioeconomic groups, as measured by educational level. Furthermore, the rapid increase in the proportion of educated women could be an important factor in fertility decline. Educational level is strongly associated with fertility: In 1988, the TFR among women with no education was almost twice that of women with at least some secondary education (6.0 vs. 3.3). In addition, the fertility of rural women was higher than that of urban women (5.4 vs. 4.1).

The median age at first birth among women aged 20–24 at the time of the survey was 19.7 years and appears to have changed little over time. Only two percent of the women surveyed had had their first child before age 15, but 47 percent had had their first child when they were 15–20. On average, women with at least some secondary education were 1.7 years older at first birth than their counterparts with no education (20.8 vs. 19.1).

Almost all women in Botswana breastfeed their infants, most through the first year of life and well into the second. On average, mothers breastfeed for 19 months. As a result, postpartum amenorrhea lasts for an average of 12 months;

moreover, sexual abstinence is observed for an average of 13 months after birth. Because some couples observe sexual abstinence for substantially longer than the average period, the mean length of time during which women are not susceptible to the risk of pregnancy after childbirth is almost 16 months. The duration of breastfeeding and postpartum abstinence is longer among rural women than among urban women. Therefore, rural women are protected from the risk of pregnancy for five months longer after childbirth than their urban counterparts (17 months vs. 12 months). Compared with women with no education, women with at least some secondary education breastfeed for a shorter period of time (20 months vs. 16 months), abstain from intercourse longer (12 months vs. 13 months), experience a shorter period of postpartum amenorrhea (13 months vs. 10 months) and are protected from the risk of pregnancy for a shorter period of time (16 months vs. 15 months).

Contraceptive Knowledge and Use

In 1988, 95 percent of the women in Botswana knew of at least one modern method of contraception, compared with 75 percent in 1984. The pill (95 percent), the IUD (89 percent) and injectables and the condom (88 percent each) were the most widely recognized methods. Female sterilization (58 percent), the diaphragm (51 percent) and male sterilization (23 percent) were the least well-known contraceptive options. Women's knowledge of modern contraceptive methods varied little by whether or not they had ever been in a union, by rural or urban residence or by age. However, 99 percent of women with at least some secondary education knew a modern method, compared with 87 percent of those with no education. More than 95 percent of the women surveyed named a government facility as the source they would use to obtain contraceptives, regardless of the method used.

More than half of the women in Botswana have used a modern method of contraception at some time, with the pill (46 percent), the IUD (13 percent) and injectables (10 percent) being the most popular methods. Since the initiation of the national family planning program in 1973, increasing proportions of women have practiced contraception to delay their first birth and to space subsequent births: Among women aged 20–24, 20 percent used contraceptives prior to their first birth and 31 percent did so after their first birth; among women aged 40–49, those proportions are four percent and eight percent, respectively.

At the time of the survey, 30 percent of the women in Botswana were using contraceptives. Almost all of those women were using a modern method, with 60 percent relying on the pill, 15 percent on the IUD, 11 percent on injectables, seven percent on female sterilization and four percent on condoms. Traditional methods accounted for less than three percent of all contraceptive use. Although overall prevalence increased by only six percentage points between 1984 and 1988, the proportion of use accounted for by modern methods rose from 68 percent to 98 percent. The proportion of users relying on the pill increased by 67 percent, while the proportion using injectables more than doubled. In 1988, the use of modern methods was greater among urban women than among rural women (38 percent vs. 25 percent) and rose with increasing levels of education (17 percent of women with no education vs. 40 percent of those with at least some secondary education). Almost all women using modern methods obtained them from government facilities (94 percent).

Of the sexually experienced women not using a contraceptive method at the time of the survey, 47 percent intended to begin doing so in the next 12 months, five percent intended to start later and three percent intended to, but were not sure when; 40 percent did not intend to use contraceptives, and five percent were unsure. Most of the women intending to use contraceptives in the next 12 months planned to use the pill (60 percent), the IUD (15 percent) or injectables (16 percent). Among those who were in a union at the time of the survey, 57 percent believed their partner approved of family planning, 32 percent thought their partner disapproved and nine percent were unsure. The proportion of women who thought their partner approved ranged from 43 percent among uneducated women to 82 percent among women with at least some secondary education. However, 28 percent of the women in a union had never discussed family planning with their partner, 43 percent had done so once or twice and only 27 percent had done so more than twice.

Overall, women in Botswana consider 4.7 children ideal. Those with no education want more children than those with secondary or higher education (5.6 vs. 3.9), and rural women want more children than urban women (4.9 vs. 4.4). The ideal number of children decreased from 6.2 among women aged 45–49 to 3.7 among those aged 15–19. At the time of the survey, 57 percent of the women in a union wanted another child, 33 percent wanted no more children or were sterilized, four percent were undecided and five percent were infecund. Among women in a union, 61 percent of those with four children, 44 percent of those with five children and 24 percent of those with six or more children wanted another birth. Forty-two percent of those who wanted another child wanted one within two years, 51 percent wanted to wait at least two years and seven percent were unsure how soon they wanted another child. Of all births in the 12 months preceding the survey, 52 percent were mistimed (wanted, but at a later time) and an additional six percent were unwanted.

Maternal and Infant Health

According to BFHS-II data, infant mortality decreased from 57 deaths per 1,000 births during 1973–1977 to 37 deaths per 1,000 births during 1985–1988. Over the same interval, the childhood mortality rate fell from 33 to 16 per 1,000 and the under-five mortality rate decreased from 89 to 53 per 1,000. However, these results should be interpreted with caution, because infant mortality rates for 1977–1981 estimated from 1981 census data and 1984 BFHS data (71 and 70 deaths per 1,000 births, respectively) are significantly higher than the rate calculated from BFHS-II data for that period (42 per 1,000).

The under-five mortality rate calculated for the 10 years preceding the BFHS-II was 56 deaths per 1,000, with very little difference between births to urban women and those to rural women. However, under-five mortality ranged from 64 per 1,000 among uneducated women to 47 per 1,000 among women with at least some secondary education. Infant mortality was highest among babies born to mothers aged 20–29 and lowest among those born to mothers younger than 20 (42 vs. 35 deaths per 1,000 births). Nevertheless, the under-five mortality rate varied by only one percentage point across all three maternal age-groups. The risk of dying before age five was higher among second-born and third-born children than among first-born children (62 vs. 47 per 1,000), and was more than twice as high among infants born within two years of the preceding birth as among those born after an interval of at least four years (89 vs. 42 deaths per 1,000).

The mothers of 92 percent of the infants born in the five years preceding the survey received prenatal care from a nurse-midwife or a doctor. During the same period, 85 percent of the mothers were vaccinated against tetanus. Overall, more than 75 per-

DIGEST

cent of deliveries were attended by trained health personnel: Women with at least some secondary education, those living in urban areas and those younger than 25 were more likely to be assisted at birth by a doctor or nurse-midwife than were women with no education, those living in rural areas or those older than 24.

Almost nine in 10 women had heard of AIDS, and 87 percent of those women had accurate knowledge about at least one route of transmission. The most frequently mentioned means of infection were multiple partners (75 percent), having sex with a person with AIDS (28 percent) or having sex with a prostitute (16 percent). Limiting sexual partners was the most frequently cited way of avoiding infection (73 percent), followed by using condoms (42 percent), avoiding prostitutes (14 percent), avoiding dirty needles (nine percent) and avoiding blood transfusions (seven percent).—*F. Althaus*

Reference

1. Central Statistics Office (Ministry of Finance and Development Planning), Family Health Division (Ministry of Health) and Institute for Resource Development/Macro Systems, Inc., *Botswana Family Health Survey II, 1988*, Gaborone, Botswana, and Columbia, Md., Aug. 1989.

Developing Country Pill Users Experience Small Rise in Blood Pressure

Compared with IUD users, pill users in both developed and developing countries experience a small increase in blood pressure at the end of one year of use, according to the results of a multicountry study of the effects of oral contraceptives on blood pressure.[1] However, this increase is unlikely to contribute substantially to hypertension. A companion study found no significant differences in blood pressure change between women taking pills containing 30 mcg of estrogen and those taking 50 mcg of estrogen.[2] Although most previous research has shown that the pill does induce changes in blood pressure, this work has been done primarily in developed countries, where the prevalence of cardiovascular disease and hypertension is high. Both new analyses allow researchers to evaluate the effects of the pill on blood pressure among women in developing countries, where relatively fewer women smoke and where socioeconomic factors dictate a difference in salt intake and other dietary influences.

To analyze changes in blood pressure among oral contraceptive users and IUD users, researchers working with the World Health Organization collected data from 10 centers in three developed and six developing countries.* Beginning in the late 1970s, new contraceptive users at each center who chose the pill as their method were randomly assigned to groups receiving one of various compositions of the pill available at that center. Because all centers distributed a pill containing 250 mcg of the progestogen levonorgestrel and 50 mcg of the estrogen ethinyl estradiol, the analysis compared women who used this particular dosage of pill with new users at each center who selected the IUD as their method of contraception. Women aged 18–34 were eligible for the study, provided they met a number of medical requirements, including regular menses, no recent use of hormonal contraceptives, blood pressure of 140/90 or less and no history of diabetes, abnormal Pap smear, liver dysfunction, thromboembolism, cerebrovascular disorder or reproductive tract malignancy.

At the initial visit, investigators took a medical and reproductive history, collected data on a number of socioeconomic variables and determined the woman's blood pressure. Subsequent visits at three-month intervals allowed investigators to update data and determine new blood pressure levels. Data from all participating centers were analyzed centrally, and any women not meeting the study criteria were excluded. Of the 1,554 women recruited into the study (770 in the pill group and 784 in the IUD group), nine percent of pill users and 10 percent of IUD users were found to be ineligible and were retrospectively excluded, leaving 704 and 703 patients, respectively, for analysis. The number of women available for analysis declined at each three-month interval, with 61 percent of pill users and 69 percent of IUD users still enrolled in the study at 12 months.

Overall, readings for both systolic and diastolic blood pressure declined by about three mmHg over the course of the study among the IUD users. Among pill users, blood pressure tended to rise initially and then remain constant or decline. As a result, the change in systolic pressure among pill users in comparison with IUD users was an increase of just under four mmHg at three months to five mmHg at 12 months. Diastolic pressure readings increased by about 2.5 mmHg over those of IUD users. The differences in change between the pill users and the IUD users were highly significant ($p<0.001$). A pill-induced change in blood pressure occurred in all 10 of the centers in the study, but the size of the increase was largest in Moscow—10.4 mmHg for systolic pressure and 6.9 mmHg for diastolic. Relatively large changes were also recorded in Manila, Singapore and Bombay, and the response was smallest in Santiago (Cuba), Havana, Bangkok and Lusaka. These differences between centers could not be explained by climate, economic development or other variables measured in the study.

Hypertension was diagnosed in four women in the pill group; no women in the IUD group developed hypertension. The cumulative life-table rate of hypertension among pill users was 0.78 per 100 woman-years of use.

A regression analysis controlling for such variables as baseline blood pressure, age, ponderal index (body weight divided by stature), history of hypertension in pregnancy, room temperature and family history of hypertension, stroke and heart disease did not explain the differences between pill and IUD users in blood pressure change. However, age and ponderal index at recruitment did predict the change in diastolic pressure, independently of pill use; the increase was associated with older age and heavier weight. But, these factors had little effect on systolic pressure change. Warmer room temperatures were associated with reductions in blood pressure.

The researchers believe they have been able to avoid a number of pitfalls in research on blood pressure and pill use by comparing changes in blood pressure rather than absolute levels of blood pressure, which may vary according to the characteristics of women who choose each method. The researchers note that most of the change in blood pressure associated with pill use—a difference of five mm at the end of one year—was already clear at the three-month and six-month intervals.

The researchers conclude that oral contraceptives do appear to cause a small transitory increase in both systolic and diastolic blood pressure, but that "it seems unlikely that oral contraceptive use will contribute substantially to hypertension and its sequelae." They add, "While it is sound to recommend screening prior to oral contraceptive use and monitoring of blood pressure in . . . users, the absence of facilities for doing so should not create a barrier to the use of oral contraceptives."

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*Centers in developed countries were located in Bratislava, Czechoslovakia; Ljubljana, Yugoslavia; and Moscow, USSR. Centers in developing countries were located in Bangkok, Thailand; Bombay, India; Havana and Santiago, Cuba; Lusaka, Zambia; Manila, Philippines; Santiago, Chile; and Singapore.

The second study, involving many of the same centers as the first analysis, examined whether the estrogen component of the pill is responsible for the apparent increase in blood pressure among pill users. Past research has offered no clear-cut answer to this question, with some analyses implicating the estrogen component of the pill and some implicating the progestogen. The study comprised women in six centers* who had been randomly assigned to one of two possible pill dosage groups; both groups received pills containing 250 mcg of the progestogen levonorgestrel, but in one group the progestogen was coupled with 50 mcg of ethinyl estradiol and in the other with a 30 mcg dose. The same criteria for enrollment in the study were used as in the previous analysis, and neither the patient nor the data collector knew which pill the patient was taking.

Of the 737 patients enrolled in the study, 363 received the pill with 50 mcg of estrogen and 374 received the pill with 30 mcg. At the time the data were analyzed, six percent of the 50 mcg group and nine percent of the 30 mcg group were excluded because they did not meet the eligibility criteria. Thus, data on 680 women divided equally between the two groups were included; 65 percent of women in the high-estrogen group and 57 percent of pill users in the low-estrogen group completed all four of the follow-up visits occurring at three-month intervals following enrollment. A within-center comparison of the demographic and health characteristics of the women in the two pill groups found no significant differences, nor was there a significant difference in baseline blood pressure levels. There were, however, not unexpected differences between centers in baseline levels, which may be at least partially attributable to country variations in ponderal index.

An overall comparison and a comparison within each center of blood pressure change among women taking the higher estrogen pill versus those taking the lower estrogen dose found no significant differences between the two groups. However, because the sample sizes in each center were small (ranging from 32 to 85), confidence intervals were wide, and differences of up to three mm in measuring systolic pressure and two mm in diastolic pressure cannot be ruled out. Although the study was only of pills containing relatively low doses of estrogen, the researchers believe that their results provide some evidence against hypotheses that estrogen or the ratio of estrogen to progestogen cause pill-induced changes in blood pressure.—*J. Johnson*

References

1. Task Force on Oral Contraceptives, World Health Organization (WHO) Special Programme of Research, Development and Research Training in Human Reproduction, "The WHO Multicentre Trial of the Vasopressor Effects of Combined Oral Contraceptives: Comparisons with IUD," *Contraception*, **40**:129, 1989.

2. ——, "The WHO Multicentre Trial of the Vasopressor Effects of Combined Oral Contraceptives: Lack of Effect of Estrogen," *Contraception*, **40**:147, 1989.

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*Centers in Bangkok, Thailand; Bombay, India; Lusaka, Zambia; Manila, Philippines; Santiago, Cuba; and Szeged, Hungary.

Haitian Fertility Rate May Have Risen in 1980s; Contraceptive Use Levels Remain Very Low

Fertility appears to be increasing in Haiti, while levels of contraceptive use have changed little since 1977. The average Haitian woman has more than six children, and only eight percent of married women currently use contraceptives. Although infant mortality has declined during the past 10 years, improvements in sanitation and vaccine coverage, as well as oral rehydration therapy, are needed. These are some of the findings of the 1987 Haitian Survey on Mortality, Morbidity and Utilization of Services (EMMUS), conducted by the Institut haïtien de l'enfance and Johns Hopkins University, in collaboration with the Haitian Ministry of Public Health and Population.[1]

Haiti's total population is estimated to be six million, and the annual growth rate is 1.7 percent. Forty percent of all Haitians are younger than 15, and 56 percent are between the ages of 15 and 60. Life expectancy at birth is about 53 years. Large families are viewed favorably in Haiti, and children are expected to provide economic security for their parents. Most Haitians (76 percent) live in the mountainous rural areas, and half of all urban residents live in the capital, Port-au-Prince. Although Haiti's economy is predominantly agricultural, only one-third of the land is arable. Agricultural output is limited by poor farming methods, population density, inadequate land distribution and extensive deforestation.

Approximately 63 percent of Haiti's people are illiterate, and fewer than 10 percent are employed in the industrial sector. Nearly 80 percent are Catholic, but the majority of Haitians also practice the voodoo religion. Many Haitians, especially those in rural areas, lack access to potable water, toilets or adequate housing. Food and medical care are scarce, and transportation is difficult. Chronic malnutrition and infectious and parasitic diseases are widespread.

The EMMUS had two definite target groups: women of childbearing age during the five years preceding the survey (those aged 15–54 at the time of the survey) and children under age five. The sample included clusters of households from three strata: metropolitan (persons residing in Port-au-Prince), other urban and rural. In all, 4,026 households were included, comprising 4,976 women and 3,994 children.

Twenty percent of the women surveyed were aged 15–19, 19 percent were 20–24, 18 percent were 25–29 and 14 percent were 30–34. Women in rural areas were somewhat older than their urban and metropolitan counterparts. Fifty-five percent of all respondents had had no schooling, 13 percent had had some primary education, 19 percent had completed primary school and 13 percent had had some secondary education. The proportion of uneducated women in rural areas (65 percent) was roughly twice that in urban or metropolitan areas (34 percent and 36 percent, respectively).

Marriage and Fertility

Sixty percent of the women interviewed were married (including those in stable nonlegal unions), 16 percent were never-married (or never-in-union), 12 percent were engaged (including those in transitory unions without cohabitation), nine percent were separated or divorced and three percent were widowed. Proportionally more rural women were married than were women in other areas. Age at marriage has decreased steadily during the last decade. In 1987, 14 percent of women aged 15–19 were married and 30 percent were engaged, compared with just five percent and 14 percent, respectively, in 1977. By the ages of 20–24, 56 percent of respondents in 1987 were married and 20 percent were engaged, compared with 27 percent and 24 percent, respectively, in 1977. Finally, 77 percent of women aged 25–29 in 1987 were married and seven percent were engaged, compared with 54 percent and 19 percent, respectively, in 1977.

According to the EMMUS, the total fertility rate (TFR) in Haiti was 6.3 lifetime births per woman for the period 1982–1987. This rate represented an increase from a rate of 5.5 in 1974–1977 and 5.9 in 1982–1983, based on data from the 1977 Haiti Fertility Survey and the 1983 Contraceptive Prevalence Survey, respectively. The investigators note that the apparent increase in fertility may be partly related to more complete reporting by women or the higher quality of the EMMUS compared with earlier surveys, but that an increase of 0.5 children per woman during the last 10 years is probable. They attribute this to the earlier age at marriage and perhaps less reliance on breastfeeding. The 1982–1987 TFR among rural women (7.1) is about two children more, on average, than that among urban or metropolitan women (4.8 and 4.6, respectively). The investigators note that rural women are more likely than others to be in stable, long-term unions.

Contraceptive Use

All women were asked whether they had ever used a contraceptive method and whether they were using one at the time of the survey. Results are reported for all women aged 15–49 who were ever married or ever in union, including those who were engaged. Overall, 12 percent of ever-married women said they had used a method at some time. Ever-use was higher among women in Port-au-Prince (19 percent) and urban areas (17 percent) than among rural women (nine percent); the investigators suggest that this difference is probably due to the lack of health services, including family planning services, in rural areas as much as to any difference in demand.

Seven percent of ever-married women said they were currently using a method. Current use of contraceptives was twice as high among women in Port-au-Prince (11 percent) as among rural women (five percent); eight percent of urban women reported current use. Overall, five percent of currently married women said they were using a modern method (the pill, the IUD, the condom, sterilization, injectables or spermicides). The prevalence of modern method use was four percent in rural areas, six percent in urban areas and eight percent in Port-au-Prince.

Contraceptive use among Haitian women increases with age, parity, level of education and stability of the union. Among ever-married women, only two percent of those aged 15–19 were using a method at the time of the survey, compared with eight percent of those aged 35–49. Five percent of all women with no education and nine percent of those with some secondary education were practicing contraception. Parity appears to be even more influential in increasing contraceptive use: For women with no education, current use rose from two percent among those with no children to nine percent among those with four. Among women with some secondary education, contraceptive use rose even more dramatically as parity increased, but the numbers were too small to make a reliable comparison. Eight percent of married women reported current contraceptive use, as did five percent of women who were widowed, separated or divorced, and two percent of those who were engaged.

The four most popular methods among women practicing contraception were the pill (cited by 36 percent of all method users); tubal ligation (17 percent); the rhythm method (13 percent); and injectables (12 percent). The pill was the most popular method among women aged 20–24 and 25–34 (chosen by 45 percent in each age-group), while tubal ligation was chosen most often by women aged 35–49 years (35 percent).

Marital status exerts an important influence on method choice. Respondents who were engaged tended to use either the rhythm method (48 percent) or the pill (41 percent), while those who were divorced, separated or widowed mainly used the pill (54 percent) or injectables (22 percent). In contrast, married women used a variety of methods, including the pill (33 percent), tubal ligation (20 percent) and rhythm and injectables (12 percent each). Not surprisingly, women relying on tubal ligation were almost exclusively married. However, although married women were the exclusive users of condoms, only three percent reported that they used them. The investigators are puzzled by this finding, since more than 10 million condoms are distributed each year in Haiti.

Infant and Child Health

The EMMUS used direct and indirect methods to estimate rates of infant and child mortality. The direct method (calculating the probabilities of dying by a given age directly from the maternal history data on all recorded live births) yields an infant mortality rate for 1982–1987 of 101 deaths per 1,000 live births, a probability of death before age five of 151 per 1,000, and a neonatal mortality rate (deaths among infants younger than one month) of 43 per 1,000. Neonatal mortality is clearly higher for male than for female infants, but females have a higher death rate than males between the ages of 12 and 23 months. The indirect method (calculating the proportion of child deaths according to the age of each mother interviewed) yields an infant mortality rate of 123 per 1,000 and a probability of death before age five of 181 per 1,000. The investigators conclude that the actual death rates among Haitian infants and children are somewhere between these two estimates.

According to either method, the infant mortality rate in Haiti has declined by 20 percent since 1977, and the probability of death before age five has declined by 35 percent. Furthermore, infant mortality appears to have fallen during the four years preceding the EMMUS, although no such trend is seen for neonatal mortality.

The EMMUS found that half of all deaths among neonates are from unknown causes, while more than half of all deaths among older infants and children are related to either infectious respiratory illnesses or diarrhea. Tetanus causes 13 percent of neonatal deaths, but none among older infants or children.

Information about infant and child health was provided by the child's mother in 88 percent of cases, and by another adult in 12 percent. Forty-three percent of children younger than five had suffered from diarrhea in the two weeks prior to the survey, and 14 percent in the preceding 24 hours. Infants aged 6–11 months appear to be at highest risk for diarrhea, as are those who are not exclusively breastfed. Not surprisingly, children living where there is potable water and latrines are at lower risk for diarrhea than are those without access to either of these amenities.

The major types of treatment for diarrhea varied by area of residence: In rural areas, 35 percent of infants and children who had diarrhea 24 hours before the survey were given no treatment, 22 percent were given traditional medicine and 22 percent were given a pharmaceutical product. In urban areas, 27 percent received a pharmaceutical product, 26 percent were given nothing and 23 percent were given oral rehydration salts; in Port-au-Prince, these proportions were 43 percent, 22 percent and 19 percent, respectively. In all three areas, boys were more likely than girls to receive oral rehydration as a treatment for diarrhea. Use of oral rehydration rose as mothers' or guardians' level of education increased.

Of the 3,994 infants and children under five included in the survey, only 653 (16 percent) had received health cards issued through programs intended to monitor and improve child nutrition, notably vitamin A intake. Even so, the mothers of 51 percent of the children reported that their child had received vitamin A supplements, and among last-born infants or children, 98 percent had been breastfed. However, the survey results suggest that only about 13 percent of infants are breastfed exclusively during their first three months of life.

Fifty-eight percent of mothers of children younger than five said they had a vaccination card, but only 41 percent could produce one. Fifty-five percent of children in Port-au-Prince had cards, as did 50 percent of those in urban areas and 37 percent in rural areas. Just 15 percent of all children under five had complete vaccination coverage (that is, they had received all doses and types of vaccine recommended by that age). Complete coverage was more common among children in urban areas (24 percent) than in rural or metropolitan areas (14 percent each). Overall, 32 percent of children had received at least one dose of diphtheria, tetanus and pertussis vaccine; 33 percent had received at least one dose of polio vaccine; 63 percent had been vaccinated against tuberculosis, and 19 percent, against measles.

Twenty-seven percent of all women said they had been vaccinated against tetanus during the past five years. Of those who were pregnant at the time of the survey, 34 percent had been vaccinated in the last five years and 24 percent had been vaccinated during their pregnancy. Among the latter group, only 20 percent of rural women had received the vaccine, compared with 34 percent of urban women and 30 percent of those living in Port-au-Prince.—*M. Witwer*

Reference

1. M. Cayemittes and A. Chahnazarian, "Survie et santé de l'enfant en Haiti: Résultats de l'Enquête mortalité, morbidité et utilization des services, 1987," Institut haitien de l'enfance, Ministère de la santé publique et de la population and Johns Hopkins University, Port-au-Prince, 1989.

Rates of Expulsion, Removal for Bleeding or Pain No Higher When IUD Is Inserted During Lactation

Women who are breastfeeding at the time they have a Copper T IUD inserted fare at least as well over the next six months as do those who are not breastfeeding: They are no more likely to expel the device and are less likely to need to have their IUD removed because of bleeding or pain.[1] Because this difference remains even when the analysis is restricted to women who have resumed menstruation, the investigators conclude that there may be an advantage to having women begin IUD use while they are breastfeeding.

A multicenter study of 1,149 IUD users was conducted in 1985 and 1986 at three family planning clinics in Latin America and two in Asia. Centers could participate if their personnel had performed at least 50 IUD insertions, if they knew the breastfeeding status at the time of IUD insertion for at least 75 percent of patients, if at least 10 percent of the women were breastfeeding at the time of insertion and if the six-month follow-up rate was at least 75 percent. Women were included in the study if they had had a Copper T IUD inserted at least 42 days after their last vaginally delivered term birth. In all, 559 participants were breastfeeding (either fully or partially) at the time of insertion, while 590 were not.

The breastfeeding and nonbreastfeeding women were comparable in terms of their socioeconomic and demographic characteristics, except that at the time of IUD insertion, the former were about two and one-half years younger. None of the women experienced uterine perforation or insertion failure. The nonbreastfeeding women were significantly more likely to have felt moderate or severe pain at insertion and to have required cervical dilatation, but the proportions reporting any of these problems were very low.

One woman is believed to have been pregnant at the time of IUD insertion; none became pregnant within three months of insertion. By six months postinsertion, one breastfeeding woman had experienced a pregnancy (believed to have been caused by an unnoticed expulsion). In addition, one nonbreastfeeding woman had become pregnant, probably because of method failure.

At six months after insertion, there was no difference between nonbreastfeeding and breastfeeding women in expulsion rates (2.8 expulsions per 100 users vs. 2.5 per 100), but the former were significantly more likely than the latter to have had their IUD removed because of excess bleeding or pain (3.2 removals per 100 users vs. 0.9 per 100). As a result, nonbreastfeeding women had a method-related termination rate almost twice that of breastfeeding women (7.1 terminations per 100 users vs. 3.9 per 100). However, because breastfeeding women were more likely to have had their IUDs removed for reasons unrelated to the method (such as to become pregnant again or for personal reasons), the total termination rates after six months (8.4 per 100 users vs. 6.3 per 100) were not significantly different.

The investigators analyzed rates of expulsion and removal for bleeding or pain, after adjusting for the women's age, the contraceptive method they had used in the month before insertion, the length of the interval between their last delivery and IUD insertion, whether or not they were menstruating around the time of insertion and the center where their IUD was inserted. The introduction of these controls had no impact on the expulsion rates, but increased somewhat the difference in rates of removal for bleeding or pain. Overall, at six months after insertion, nonbreastfeeding women were more than three times as likely as breastfeeding women to have had their IUD removed for this reason (3.4 removals per 100 users vs. 0.9 per 100). The differential was even greater among women who had used either no method or a method other than the pill or IUD prior to insertion (4.5 per 100 users vs. 0.5 per 100), among those whose most recent delivery had occurred within six months of insertion (4.8 per 100 users vs. 0.5 per 100) and among those who were still amenorrheic at insertion (4.0 per 100 vs. 0.3 per 100).

Furthermore, at six months, women who were not breastfeeding were significantly more likely to have had their IUD removed because of bleeding or pain (3.2 removals per 100 users) than were those who were fully breastfeeding (0.4 per 100) or who had begun giving their infant supplements (1.4 per 100). This differential was seen even when the analysis was limited to women whose menses had resumed: 3.2 removals per 100 users among women who were not breastfeeding six months after insertion, compared with no removals among those still breastfeeding.

The investigators point out that the major difference in removal rates overall occurred in the first three months of use, when no breastfeeding women had the devices removed, compared with 2.2 removals per 100 nonbreastfeeding women. They con-

DIGEST

clude that breastfeeding women showed no adverse effects of IUD use and, in fact, "fared significantly better than the nonbreastfeeding women with regard to ease of insertion, bleeding/pain problems and overall continuation of IUD use through six months postinsertion."—*M. Klitsch*

Reference

1. I.-C. Chi et al., "Performance of the Copper T-380A Intrauterine Device in Breastfeeding Women," *Contraception*, **39:**603, 1989.

IUD Use Is Common, but Use of Hormonal, Barrier Methods Rare in Vietnam

Fertility in Vietnam appears to have declined somewhat over the past decade: The total fertility rate (TFR) among women aged 15–39 decreased from 4.6 lifetime births per woman in 1977 to 3.7 in 1987, according to data from a recent survey.[1] At the time of the survey, the mean age at first marriage for Vietnamese women was 22.4 years in the North and 24.6 in the South; one in four women aged 25–29 were still unmarried. Half of currently married women aged 15–49 reported practicing contraception, with the IUD the most commonly used method.

In 1988, with the help of the United Nations' Economic and Social Commission for Asia and the Pacific, Vietnam's National Committee for Population and Family Planning conducted a survey of 4,800 Vietnamese households. Translations of Demographic and Health Survey questionnaires (one for ever-married women aged 15–49 and one for all other household members) were used to obtain data on fertility, infant and child mortality, the use of contraceptives and marital status. Besides a national census conducted in 1979, this survey is the only published source of demographic information on Vietnam since the northern and southern parts of the country were united in 1975.

According to the survey results, over the period 1985–1987, the TFR among women aged 15–49 was 4.1 lifetime births per woman (3.6 in the South and 4.4 in the North). The researchers note that because survey data sometimes understate very recent births, 4.1 is a conservative estimate. In the North, decreases in fertility among women aged 30 or older were partially offset by increases in childbearing among women under 25, while in the South, fertility declined among women in all age-groups.

The researchers compared the survey data to an analysis of data from the 1979 census, which found that the TFR had fallen from over six births per woman in the late 1960s to fewer than five in the late 1970s. Thus, the evidence suggests that there may be an ongoing decline in Vietnamese fertility. Census data also show that fertility was lowest in the provinces with the highest degree of urbanization and education, and that the fertility decline was most rapid in the South.

The survey data indicate that the proportion of women who were single was very high, especially in the South, where one of every four women aged 25–29 were unmarried, compared with one in 10 in the North. Furthermore, among men in that age-group, one in three men in the South and one in six in the North were still single. Women's mean age at first marriage was 22.4 years in the North and 24.6 in the South; likewise, men's mean age at marriage was 24.2 years in the North and 26.3 in the South. The investigators note that the low rate of marriage may be attributable in part to the loss of men during the war and, in the South, in part to the sudden economic recession that followed the wartime prosperity of the early 1970s.

Fifty percent of currently married women reported that they were practicing contraception at the time of the survey; however, this figure is inconsistent with a TFR of 4.1, suggesting that women may have overreported contraceptive use. The IUD was the most popular method of contraception. Women in the South were more likely to rely on traditional methods such as rhythm and withdrawal than were those in the North. Very few women reported using condoms or the pill, and sterilization was rare, particularly among men.

The infant mortality rate for the 1984–1986 period was 37 deaths per 1,000 births. According to the investigators, this rate seems low for a poor country, but may be accurate, as China and Sri Lanka have achieved even lower infant mortality rates. Moreover, they point out, infant mortality was highest among uneducated Vietnamese, who made up only six percent of the sample, and fell with increasing levels of education.

As age cohorts of men not decimated by the war reach their 20s and 30s in the next few years, sex ratios can be expected to reequalize, and the prevalence of marriage most likely will increase. The investigators suggest that, in the absence of counterbalancing factors, fertility may increase, at least in the short term. However, they also comment that, given the relatively high levels of reliance on traditional contraceptive methods, Vietnamese women appear interested in limiting their fertility. "More attention should be given," they conclude, "to supplying some of the contraceptive methods, such as the . . . pill and surgical sterilization, [that] have been used so successfully in other countries in Asia."—*F. Althaus*

Reference

1. V. Q. Nhân and R. Hanenberg, "The 1988 Demographic Survey of Viet Nam," *Asia-Pacific Population Journal*, Vol. 4, No. 3, 1989, p. 3.

Mexican Fertility Falls As Female Sterilization Becomes More Popular

Mexican fertility declined through the mid-1980s, although the pace of the decline has slowed somewhat in recent years. At present rates of childbearing—which vary widely with education and area of residence—Mexican women can expect to have nearly four children by the end of their reproductive years. Thus, on average, women will have one more child than they consider to be ideal. For the first time, female sterilization is the most widely used method of contraception in Mexico, and the overall contraceptive prevalence rate among women in a union has now reached 53 percent. These are some of the highlights of the Encuesta Nacional Sobre Fecundidad y Salud (ENSFS) involving 9,310 Mexican women aged 15–49; the ENSFS was carried out in 1987 as part of the global Demographic and Health Survey (DHS) project.[1]

At the time of the survey, just over one-tenth of the respondents were illiterate; one-quarter had not completed primary school, while two-fifths had had at least a secondary education. Metropolitan-area women had obtained more education than their rural counterparts: Fifty-five percent of women in metropolitan areas had finished at least their secondary schooling, compared with just 14 percent of those living in predominantly rural areas. (Mexico has undergone rapid urbanization in the past few decades; more than two-thirds of the population now live in urban areas.) Further, women aged 15–19 were nearly eight times more likely to have finished secondary school than were women aged 45–49 (62 percent vs. eight percent).

Marriage and Fertility

According to the 1987 ENSFS, the median age at first union among women older than 25 was approximately 20 years. Rural women entered their first union three years earlier than women living in large metropolitan areas, and the differential in age at first union between uneducated women and those with a secondary education was five years. In addition, women 25–29 years old entered their first union at a slightly later age (20) than did their counterparts aged 45–49 (19). The proportions of women in each type of union have remained virtually unchanged over the past two decades: Comparing data from the 1987 ENSFS with those from the 1976 Encuesta Mexicana de Fecundidad and the 1982 Encuesta Nacional Demográfica shows that between 1976 and 1987, about 50 percent of Mexican women were legally married, nine percent were in consensual unions, 33 percent were single, and seven percent were widowed, divorced or separated.

The 1987 ENSFS also showed that 54 percent of currently married women were exposed to the risk of pregnancy, as were 43 percent of women in consensual unions, but only one percent of single women. Among women currently in a union, the most common reasons for not being at risk of pregnancy were, in descending order, not having had intercourse in the preceding month, being pregnant, being amenorrheic or being infecund.

Postpartum infecundity was estimated to last approximately eight months, taking into account the duration of postpartum amenorrhea (six months) and postpartum abstinence (five months). Survey respondents had breastfed their most recently born child for 11 months, on average. There was a strong negative relationship between the duration of breastfeeding and the level of education and area of residence: At the time of the survey, the least educated women had breastfed their babies for an average of 18 months, compared with seven months among the most educated; women living in sparsely populated rural areas had breastfed for about 14 months, compared with seven months among those living in metropolitan areas.

A question on the frequency of sexual relations was a unique feature of the Mexican DHS. Of all the women surveyed, those aged 20–24 were the most sexually active, reporting 5.7 acts of sexual intercourse during the past month. Women aged 25–29 reported the next highest coital frequency (5.4 times), followed by women aged 15–19 (5.2 times). Frequency of sexual intercourse differs most by educational attainment: Highly educated women reported having had intercourse more than six times during the preceding month, compared with just over four times among women who did not complete primary school.

Mexico's total fertility rate (TFR) fell from 6.3 lifetime births per woman in 1973 to 3.8 per woman in 1986, a decline of nearly 40 percent. However, the pace of that decline slowed appreciably in the four years preceding the survey. For example, the TFR fell by 16 percent in 1974–1978 and 1978–1982, but by 10 percent in 1982–1986. Not only have large rural-urban differentials in fertility persisted, they have widened: In 1970–1975, rural Mexican women had an average of two more lifetime births than their urban counterparts, while in 1981–1986, that differential widened to three children. Differentials in educational attainment also continue to have a substantial impact on fertility: For example, the TFR among women who had a complete primary education was 3.7, compared with 5.7 among those who did not.

Fertility has been declining among Mexican women in all age-groups, especially at the two extremes of the reproductive period. Between 1974 and 1986, the largest drop (one of 50 percent) occurred among women aged 35–39. For the period 1978–1986, the age-specific fertility rate for Mexican 15–19-year-olds fell by more than one-third, from 132 births per 1,000 to 84 per 1,000.

The results of the 1987 ENSFS suggest a trend toward a slightly higher age at first birth, although the trend is not consistent, in part because the more educated women are concentrated in the younger cohorts. Overall, educational attainment continues to exert a strong influence on age at first birth across all age-groups. For example, women with a complete secondary education had had their first child by age 24, on average, while women with no schooling had had their first child by age 19.

Contraceptive Knowledge and Use

In Mexico, the most widely known method of contraception is the pill, known by 90 percent of respondents. It is followed, in descending order, by the IUD, female sterilization and injectables (each known by approximately 84 percent of the sample), the condom and vasectomy (each known by 64 percent), spermicides and rhythm (each known by 60 percent) and withdrawal (known by slightly less than 50 percent).

Approximately 53 percent of all women in a union said they were using a contraceptive method at the time of the survey. According to the 1987 Mexico ENSFS, levels of contraceptive prevalence rose in the mid-1980s, but did so at a slower pace than over the period 1976–1982. The proportion of Mexican women in a union who were using a modern contraceptive method* reached 45 percent in 1987, after having risen steadily over two decades (from 23 percent in 1976 to 32 percent in 1979 and 42 percent in 1982). However, the pace of this increase slackened somewhat after 1982.

From 1982 through 1987, the overall method mix remained stable, with roughly 80 percent of use accounted for by modern methods, five percent by barrier methods and 15 percent by traditional methods. However, notable changes in the use of specific methods took place between 1982 and 1987: Female sterilization became the most widely used modern method among Mexican women in a union who were using a method, having increased from 28 percent to 36 percent during that period. Although vasectomy still accounts for a tiny proportion of overall prevalence (less than two percent), reliance on male sterilization nevertheless increased substantially after having remained fairly stable at under one percent throughout the preceding decade. Use of the pill dropped by almost half, from 30 percent of users in 1982 to 18 percent in 1987.

The 1987 ENSFS also contained a separate questionnaire on sterilization. Compared with users of other modern methods of contraception, sterilized respondents tended to be older, of higher parity and less educated. Further, Mexican women who had undergone sterilization had used a wider variety of methods and had used modern methods consistently more than any other users. Nearly 88 percent of the women who were sterilized claimed that they had participated directly in the decision to have the operation; however, 13 percent said that someone else had decided for them (although nine percent said they still had wanted to be sterilized).

The survey results also revealed that one-fifth of sterilized women had made the decision to have the operation just three days before; another one-fifth had waited 2–6 months after deciding and nearly one-third said that 7–12 months had elapsed between the time that the decision was

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*The ENSFS categorized contraceptive methods as modern (the pill, the IUD, male and female sterilization and injectables), barrier (the condom and spermicides) and traditional (rhythm, withdrawal and herbs).

DIGEST

made and the operation. Eighty percent of the women had had the operation in a government institution.

There were strong differentials by education in the proportion of women who had experienced health problems after the operation, with twice as many uneducated women as women with secondary schooling reporting such health problems (40 percent vs. 20 percent). Curiously, the relationship was reversed regarding the experience of personal or family problems: About 10 percent of uneducated women claimed they had had personal difficulties after the operation, while the corresponding proportion among women who had completed primary school was 17 percent. The most common problems were the husband's rejection and the disapproval of close relatives.

Eighty-six percent of Mexican women who had been sterilized said they would have the operation again, and 77 percent would recommend the operation to others. Both of these proportions varied most according to the length of time spent on the initial decision and the woman's level of educational attainment. Overall, nine percent of the women who had been sterilized were unsatisfied with their decision. Of these women, 36 percent wanted more children and 17 percent each either had not wanted the operation to begin with, felt ill after the operation or suffered feelings of depression or sadness.

The majority of Mexican women who practiced contraception had obtained their method through the public sector (62 percent), a proportion that has increased steadily since 1979. Among the remaining 38 percent (all of whom had gone to private providers), a higher proportion (22 percent) had gone to pharmacies than to private doctors' offices (14 percent).

Overall, 65 percent of currently married women said that they wanted no more children. As would be expected, the proportion saying they wanted no more rose with age: Forty percent of women aged 20–24, 57 percent of 25–29-year-olds and 72 percent of 30–34-year-olds reported that they had had all the children they wanted.

The Mexico ENSFS also measured how well women's reproductive intentions conform to their contraceptive practice. Among women exposed to the risk of pregnancy,* there were large differentials in method use according to parity, place of residence and education: Forty percent of uneducated women exposed to the risk of pregnancy who wanted no more children did not use a method, while the corresponding proportions among women who had completed primary school and secondary school were 11 percent and two percent, respectively. The proportions who wanted to wait more than two years before having their next child but were not currently using any method followed a similar educational pattern.

The overwhelming majority of Mexican women said that their ideal family size was three children. This ideal varied considerably by age, education, parity and area of residence, however. For example, 20–24-year-old Mexican women said an ideal family would consist of 2.6 children, while 45–49-year-olds believed that four would be ideal. Similarly, the ideal family size was 4.4 children among uneducated Mexican women and 2.5 among those with at least a secondary education.

Maternal and Child Health

According to estimates from the Mexican ENSFS, the infant mortality rate during 1982–1987 was 47 deaths per 1,000 live births, considerably less than the rate of 67 deaths for the preceding five-year period. In addition, from 1982 to 1987, 61 out of 1,000 children born in Mexico died before their fifth birthday, compared with 83 per 1,000 for 1977–1981. Differences in mortality rates according to parity were more pronounced than those related to the mother's age, and infant and child mortality rates were highest among women who had had birth intervals of less than two years. In addition, babies born in rural areas were three times more likely to have died before their first birthday than were those born in metropolitan areas, and babies born to women with no education were twice as likely to have died as were those born to women who had completed their primary schooling.

Overall, 16 percent of Mexican women who had given birth in the five years preceding the survey received no prenatal care; this proportion rose to one-third among women with no education. Sixty-eight percent of all respondents received prenatal care from a physician, while 13 percent went to a traditional midwife and three percent saw a nurse. Similarly, nearly two-thirds of all Mexican babies were delivered by physicians and just one-fourth by traditional midwives. It is worth noting that one-fifth of all births in metropolitan areas were delivered by cesarean section, a finding that reflects both the increased availability of medical services and the higher overall socioeconomic status in such areas.

Nearly one-quarter of children under age five had had diarrhea in the two weeks before the survey. Of these, 85 percent had received some kind of treatment, but only four percent were treated with oral rehydration salts.—*L. Remez*

Reference

1. Dirección General de Planificación Familiar, Subsecretaria de Servicios de Salud, Secretaria de Salud, *Encuesta Nacional Sobre Fecundidad y Salud, 1987*, Institute for Resource Development, Mexico City, July 1989.

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*Defined as women who are not pregnant, who are not experiencing postpartum amenorrhea, who are not sterile, who have had sexual relations during the month preceding the survey and who had their last menstrual period within the past two months.

Books in Review

A Unique Response to Population Growth

Community Development and Family Planning: An Egyptian Experiment
by J. Mayone Stycos, Hussein Abdel Aziz Sayed, Roger Avery and Samuel Fridman, Westview Press, Boulder, Colo., 1988, $36.00, 224 pp.

Reviewed by Susan H. Cochrane

Historically, geographically and demographically, Egypt is unique. Its geographic and historical distinctiveness lie in its position as a crossroads between Europe, Africa and Asia. Its culture and agriculture have been fed from the south by the Nile River and the cultures of Africa, overlaid in relatively modern history by Greek and Roman influences and, subsequently, by the Arabs and the influx of Islam.

This setting is highly relevant to the current demographic situation of the country, in which there are really three Egypts: the comparatively modern and cosmopolitan cities of Cairo and Alexandria, and the two rural areas of Upper Egypt and Lower Egypt. This book by J. Mayone Stycos and colleagues concerns the rural areas. The authors recognize, and their findings support, the fact that Upper Egypt is the much more traditional and underdeveloped of the two and is also less influenced by Europe and Asia. One of the authors' main conclusions, which has been found elsewhere,[1] is that different policies must be designed for the two areas.

Economically, Egypt is highly dependent on a narrow strip of very fertile agricultural land that is extremely dense in population and extensively cultivated. Despite the fertility of this land, Egypt has had to rely heavily for the past 20 years on large-scale food imports and food aid. Coupled with the massive flow of people from the land into the metropolitan areas and the uncontrolled growth of these areas, this dependency forced Egyptian policymakers to recognize early on the dimensions of the population problem.

The Egyptian leadership sought to cope with the problem through a valiant attempt to industrialize, to develop new towns and to create new agricultural land through massive investment in land reclamation. It also recognized that just coping was not enough and that efforts must be made to reduce fertility. As early as the mid-1960s, with the drafting of the National Charter, Egyptian President Gamal Abdel Nasser stated that population increase was "the most serious obstacle to the efforts of the Egyptian people in their drive to increase levels of production" [p. 14]. And as Stycos and his coauthors report, Nasser stated in 1966 that family planning was to have highest priority.

Somewhat uniquely, however, Egypt took very seriously the philosophy that "development is the best contraceptive," which had been espoused by many attendees of the 1974 World Population Conference in Bucharest. Consequently, although family planning was incorporated into Egypt's health system in a rather passive way, the population strategy stressed improving the development of rural communities to indirectly bring about fertility decline. It is this experience on which Stycos and his coauthors focus.

The evolution of Egypt's population policy is well explained in the book. Understanding the reason Egypt's policy took the turn it did is perhaps easier if one remembers that at the time it was being formulated, there had been no successes in bringing about fertility decline in China, Colombia or Indonesia. Perhaps only Sri Lanka and Taiwan had had such successes, and Egyptian policymakers were faced with much higher levels of mortality and illiteracy than their counterparts in those countries. What may be more surprising is that the Egyptian policy emphasized dimensions of development that were designed more to improve income generation and fertility attitudes than to reduce mortality and illiteracy.

Community Development and Family Planning focuses on the demographic dimensions of Egypt in an attempt to determine whether the country's unique policy response to its rapid population growth succeeded. Yet it is both more and less than a program evaluation, in that the authors attempt to explore not only the role of the program in determining contraceptive use and fertility in Egypt but also the role of development policies in explaining these phenomena in general. The broader agenda of the book makes it interesting to those studying the determinants of fertility, as well as to those who wish to study the role of policy. However, as do the multiple objectives of the program itself, the multiple objectives of the book tend to confuse the issues. Another unfortunate similarity between the program and the book is the lack of a clear, overarching framework or theory that would give coherence to many worthy objectives. This said, it must be added that the book, unlike the program, is a success.

The authors evaluate Egypt's population and development program in the context of how community characteristics in general, and program inputs in particular, determine the attitudes of men and women. But preliminary to the main topic is a chapter describing the impact of contraceptive use on fertility in rural Egypt through an analysis of the effects of various proximate determinants. This analysis, as well as previous ones,[2] shows that contraceptive use has significant negative effects on fertility in Egypt. This may seem

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obvious to some, but for a couple of reasons, it may not always be the case: If the pill is available without a prescription, as it is in Egypt, then use is primarily user-controlled, and ineffective use at the hands of the poorly educated may negate most of the expected effect; in addition, those who are the most fertile may be more likely than others to practice contraception, and thus it could seem to have a positive association with fertility.[3]

It is very difficult to measure either the quality of use or whether contraceptive use is selective of those who already have more children or perceive themselves as being more fertile. In the analysis by Stycos and colleagues, the lack of a model incorporating the demand for children prevents the investigators from successfully disentangling the selectivity issue, despite great efforts. Nevertheless, they show convincingly that contraceptive use, even of the low quality that may prevail in rural Egypt, has a significant negative effect on fertility. The selectivity problem probably means that, if anything, the effect is underestimated.

The other chapters of the book are more descriptive, and thus much less subject to methodological nit-picking. These chapters provide a rich picture of fertility attitudes and contraceptive use in rural Egypt and the impact of the population and development program in shaping them. Descriptions are included of husbands' and wives' attitudes and attitude formation, the importance of region and governorate in explaining differences in these attitudes, the extent of couple exposure to the various elements in the program and the effect of program exposure on fertility and on contraceptive attitudes and behavior.

Especially interesting is the chapter entitled "Men, Women and Villages," which describes the attitudes of both men and women on a wide range of topics. The information indicates that in Egypt, husbands are not the obstacle to fertility decline that they have often been accused of being; the authors conclude this chapter by noting that "the sexes in rural Egypt think alike on a wide range of topics" [p. 66]. This observation conforms with a conclusion of the Egyptian Fertility Survey, although the latter is not cited in this work.[4] In fact, the current work and the Egyptian Fertility Survey often confirm and expand on each other's findings. The former has a wider variety of measures of fertility preferences and attitudes toward contraception, for example, while the latter has more on attitudes toward the costs and benefits of children.

The distinctive portion of this book, however, lies in its evaluation of the effect of the population and development program on these attitudes and behavior. Unfortunately, there is no one place where the program is explained in detail, and one must gather facts about it piecemeal. For example, not until page 106 does the reader learn that all villages in the program were supposed to be within walking distance of a family planning clinic. This is extremely important, since the program did not itself provide family planning. This particular design feature is generally recognized as a major flaw of the program, but the analysis does not include an objective assessment of the actual availability of family planning.

One can summarize the findings of the evaluation as follows: The population and development program appears to have had a significant effect on the knowledge of family planning and on family-size preferences; its effect on contraceptive use is less clear, varying by region, the motivation to have more children and whether weighted or unweighted observations are used; couples do not appear to have been very aware of the availability of the development projects, such as beekeeping and poultry production; the development projects did not affect knowledge, attitudes and practice, anyway; whatever impact the population and development program had was because of its family planning inputs;[*] and, less certainly, a scale effect appears to make greater concentration of volunteers more effective.

In the concluding chapter, the authors partially explain why the program failed: "the organizational demands on a program that attempts to integrate community development with family planning may be so great for a country such as Egypt that neither development nor family planning can be effectively delivered" [p. 176]. Stycos and his colleagues conclude that the program was not conceptually flawed because, in contrast to some other investigators, they find that community factors affect knowledge, attitudes and practice. I myself, however, am saddened by the fact that education and mortality were not pursued more rigorously in general and that the dimension of development focused on was small-scale income generation. A cost-effectiveness analysis of what it takes to raise income compared with what it would take to increase schooling and reduce infant mortality would have been an interesting guide to policy. I also believe, however, that at least in Lower Egypt, where there is unmet need for family planning, attention should have been focused on service delivery rather than on development.

Finally, while one may have desired greater crispness and methodological purity in the telling of the story, the conclusions of the book are a very respectable achievement for an evaluation of an experiment in social change.

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[*] As the authors recognize, the association with respect to some of these inputs is not clear-cut. The incentive payments to volunteers are significantly related to knowledge, attitude and practice levels, but high performance in a village affects the levels of those payments.

References

1. A. M. Hallouda, S. Farid and S. H. Cochrane, eds., *Egypt: Demographic Responses to Modernization*, Central Agency for Public Mobilization and Statistics, Cairo, 1988; and S. H. Cochrane, M. A. Khan and I. K. T. Osheba, "Education, Income and the Demand for Children: A Revised Perspective," *Economic Development and Cultural Change*, **38**:313, 1990.

2. A. C. Kelley and R. M. Schmidt, "Family Planning, Socioeconomic Change and Population Policy in Egypt: An Exploratory Methodology," paper presented at the Cornell University International Population Program, Ithaca, N.Y., Apr. 30, 1984; and R. A. Easterlin, E. M. Crimmins and I. K. T Osheba, "Determinants of Fertility Control," in A. M. Hallouda et al., 1988, op. cit. (see reference 1).

3. M. R. Rosenzweig and T. P. Schultz, "The Supply and Demand for Births: Fertility and Its Life Cycle Consequences," *American Economic Review*, **75**:992, 1985.

4. A. M. Hallouda, S. Z. Amin, S. H. Cochrane and S. M. Farid, "Socio-Economic Differentials and Comparative Data from Husbands and Wives," *The Egyptian Fertility Survey, 1980, Volume III*, Central Agency for Public Mobilization and Statistics and World Fertility Survey/International Statistical Institute, Cairo, 1983.

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International Family Planning Perspectives

Women, Work and Reproduction in Karachi
Acceptability of Contraceptive Implants
Sterilizations by Thai Nurse-Midwives

Characteristics of Only Children in China

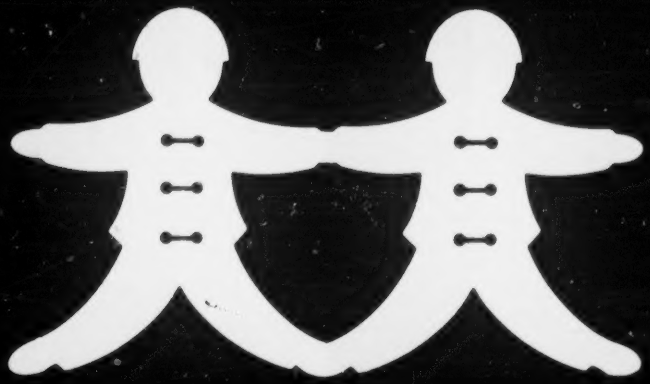

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Table of Contents

		Page
Update		42

Articles

Scholastic and Personality Characteristics Of Only Children and Children With Siblings in China	Dudley L. Poston, Jr., and Toni Falbo	45
Initial Acceptability of Contraceptive Implants in Four Developing Countries	Thomas T. Kane, Gaston Farr and Barbara Janowitz	49
Postpartum Sterilization by Nurse-Midwives in Thailand	Kanchana Kanchanasinith, Pattaka Piyapinyo, Pichit Pitaktepsombati, Suvathana Vibulsresth, D. S. Gates, Barbara Janowitz and Mark Robbins	55
Induced Abortion: A World Review, 1990	Stanley K. Henshaw	59
Women, Work and Reproduction In Karachi	Zeba A. Sathar and Shahnaz Kazi	66

Digest

More Thai Women Now Using Contraceptives to Delay First Birth	70
In Sri Lanka, a Majority of Couples Have Talked About Family Planning	71
Pill Use Appears to Increase Risk of Liver Cancer in Women Under 50	72
In Ghana, Most Women Know a Modern Method but Very Few Use One	73
Vaginal Ring Is Effective for at Least One Year, Worldwide Trials Show	75

Books in Review

A Handbook for Family Planning Providers	Aníbal Faúndes	77
Complex Analyses, Personal Decisions	Barbara Entwisle	79
Note to Authors		44

UPDATE

A Test of the Kangaroo Method

Kangaroos are not native to Africa, but a technique derived from the way the Australian marsupial cares for her young appears to have helped low-birth-weight babies in Mozambique to gain weight and to have increased their chances of survival.[1] Dubbed the "kangaroo method" because the underweight newborn is wrapped in a pouch-like enclosure near the mother's breasts in a manner resembling the way a kangaroo mother carries her young in an abdominal pouch, the new approach keeps the baby warm and allows it to feed freely. Only five of the first 100 babies placed in the program died during the kangaroo nursing period, and the remainder were discharged after a mean hospital stay of one month; they had gained an average of 13 g per day, and nearly all were being exclusively breastfed at discharge. The investigators point out that because they could not conduct a randomized study, they cannot draw definitive conclusions about the method's safety and effectiveness. They add, however, that "considering the high late neonatal mortality rates usually recorded in [their] nursery for newborns weighing less than 1,500 g (about 18 percent), any 'technology' that can afford a 95 percent survival rate . . . should be considered highly effective."

[1] F. Colonna et al., "The 'Kangaroo-Mother' Method: Evaluation of an Alternative Model for the Care of Low Birth Weight Newborns in Developing Countries," *International Journal of Gynecology and Obstetrics,* **31**:335, 1990.

Rising AIDS Tide in Thailand

At the end of 1986, Thailand's Ministry of Public Health was reporting only eight cases of AIDS and 10 more known cases of human immunodeficiency virus (HIV) infection; by February 1990, however, there were nearly 15,000 recorded cases of HIV infection in the country, and an independent group of medical experts was estimating that the actual number of Thais infected might be 10 times the official total.[1] Thailand's National AIDS Prevention and Control Program now reports that almost half of intravenous drug users in the country are infected with HIV, and researchers believe that levels of infection among the estimated 500,000 prostitutes in Thailand are high. According to one report, 59 percent of recorded HIV infections in the province of Chiang Mai are among female prostitutes and 17 percent are among male manual workers, the most common clients of Thai prostitutes; the remaining cases have been found among students, civil servants and housewives. HIV infection appears to have spread most rapidly among women in recent years: In 1986, according to the Thai government, 17 males were HIV infected for every female; by 1990, that ratio had fallen to five males for every female.

[1] D. G. Smith, "Thailand: AIDS Crisis Looms," *Lancet,* I:781, 1990.

Smoking Promotes Pelvic Infection

Cigarette smoking may increase the risk of pelvic inflammatory disease (PID) among women, regardless of whether they are current smokers or only smoked in the past.[1] A case-control analysis of 192 women with PID and 642 without PID that controlled for the women's age, race, education, marital status, number of recent sex partners, frequency of intercourse, number of episodes of gonorrhea and current contraceptive method showed that current smokers are 70 percent more likely than those who have never smoked to require hospitalization for treatment of PID, and that former smokers (those who quit more than three months before the interview) are more than twice as likely as nonsmokers to develop serious PID. The researchers suggest that if this association is causal, "the predominant mechanism of action is likely to be a permanent or long-lasting change in anatomy, physiology or both that it is not yet fully understood."

[1] P. A. Marchbanks, N. C. Lee and H. B. Peterson, "Cigarette Smoking as a Risk Factor for Pelvic Inflammatory Disease," *American Journal of Obstetrics and Gynecology,* **162**:639, 1990.

Age No Bar to Male Fertility

Men aged 55 and older are only slightly less able to father a child than are younger men, according to the results of a study based on World Fertility Survey data from Cote d'Ivoire, Ghana, Kenya, the Sudan and Syria.[1] Analyses of the period of time necessary for conception showed that once the length of the marital union and the wife's age are taken into account, men aged 55 or older in three of the countries did not need significantly longer than those younger than 45 to impregnate a woman; only in Kenya and Syria, where older men needed 17 percent longer and 23 percent longer, respectively, to father a child, were the differences statistically significant. The investigators add that "in all countries except Syria, the difference in waiting time [to conception] between husbands under 45 and those aged 45–55 is only about one to two months at most [marital] durations."

[1] N. Goldman and M. Montgomery, "Fecundability and Husband's Age," *Social Biology,* **36**:146, 1989.

Poor Cancer Outcomes in Nigeria

Over the course of four years, 72 women were admitted to a Nigerian hospital for treatment of gynecologic cancer: Seventy-four percent had cervical cancer, 14 percent ovarian cancer, eight percent endometrial cancer and four percent vulvar cancer.[1] Four out of five patients came to the hospital when they were at Stages III or IV of tumor development, however, leaving them with a poor prognosis. Indeed, 11 patients (including half of those with ovarian cancer) died either on admission or shortly after diagnosis. The investigators observe that because of travel difficulties and the expense of appropriate drugs or radiotherapy, it is unlikely that women in developing countries who develop cancer can be treated or cured; thus, it is important that these countries focus as much as possible on the prevention of reproductive cancers.

1. N. D. Briggs and K. C. Katchy, "Pattern of Primary Gynecological Malignancies as Seen in a Tertiary Hospital Situated in the Rivers State of Nigeria," *International Journal of Gynecology and Obstetrics*, **31**:157, 1990.

Tips on Promoting Breastfeeding

Mass media campaigns intended to promote the practice of breastfeeding succeed or fail because of a few basic elements, according to a review of 25 such programs.[1] Most important is that programs identify the barriers to breastfeeding ahead of time and address the appropriate audience; as the reviewers point out, "depending upon the local situation, the primary target audiences may not be pregnant women and new mothers." In addition, most women already believe that breast milk is best for their babies, so general campaigns aimed at convincing women that breastfeeding is best do not further the cause. Successful programs, the investigators conclude, developed an overall communications strategy that was based on an analysis of the barriers to breastfeeding that existed locally, planned so that the promotion program could be sustained over the long term, established sound administrative and financial management, chose messages that were appropriate to their audience and ensured that they had enough funds that the program would have an impact.

1 C. P. Green, *Media Promotion of Breastfeeding: A Decade's Experience*, Academy for Educational Development, Washington, D.C., 1989.

Implant Successful in China Trials

No pregnancies were reported among 100 Chinese women relying on the NORPLANT®-2 contraceptive implant over the first year of use, and virtually all of the women continued using the method over the full year.[1] A comparison group of 100 users of a levonorgestrel-releasing IUD experienced one pregnancy over the same period. The use-related discontinuation rates for the implant and the IUD after the first year were 3.0 and 9.0 per 100, respectively. Overall, the respective one-year continuation rates were 96 per 100 and 90 per 100. However, significantly more users reported decreased menstrual flow with the IUD than with the implant (66 percent vs. 24 percent), while significantly more implant users reported prolonged bleeding (39 percent vs. 11 percent). In addition, the husbands of the implant users were more likely to say that use of the method had "disturbed family life significantly" than were the husbands of IUD users. Nonetheless, nine out of 10 women in both groups said they planned to continue using the method.

1. G. Ji et al., "Comparison of the Clinical Performance, Contraceptive Efficacy and Acceptability of Levonorgestrel-Releasing IUD and NORPLANT®-2 Implants in China," *Contraception*, **41**:485, 1990.

Sons' Value Is More Than Economic

The importance of sons to widowed mothers cannot be measured simply in economic terms, according to a village study conducted in Maharashtra, India.[1] An investigator surveyed 123 widows in a rural village, and conducted extended interviews with 30 of the widows to gather detailed information about their economic situation and daily lives. Half of the women were living with a married son, but these women tended to be economically active and did not necessarily depend on their son for support. Only one in six were living alone, and they were usually better off than those who lived with a son. The researcher comments that most of the widows expressed a preference for sons even when their sons were contributing little or nothing to their support. Son preference, she argues, often involves issues of lineage, religious oblations that only sons can perform and cultural expectations that diminish the economic role of daughters. The investigator concludes that social security or pension plans, which some have suggested could substitute for old-age support from sons, may not necessarily reduce son preference, and may therefore have less of an influence on fertility decision-making than has sometimes been assumed.

1. C. Vlassoff, "The Value of Sons in an Indian Village: How Widows See It," *Population Studies*, **44**:5, 1990.

IUD Insertion and Uterine Position

A tilted uterus should be no contraindication for IUD use, according to the results of a multicountry study conducted over 11 years at 23 centers.[1] More than 5,500 parous women who had IUDs inserted were compared to determine whether uterine position affected the frequency of complications or the device's effectiveness. The investigators discovered that there were no statistically significant differences in the incidence of failed IUD insertion or uterine perforation between women with a normal uterus and those in whom the uterus was tilted either backward (retroverted) or forward (anteverted). The only significant difference in insertion-related problems was that women with a retroverted uterus were less likely to have had cervical lacerations than were other women. In addition, at the end of one year, women with a normal uterus were significantly more likely to have had their IUD removed because of bleeding or pain. The researchers speculate that when experienced obstetrician-gynecologists insert an IUD, they can effectively deal with difficult uterine positions "by using measures such as sounding to detect direction and curvature of the uterine lumen and/or [using] the tenaculum to straighten the uterus."

1. I.-C. Chi et al., "Do Retroverted Uteri Adversely Affect Insertions and Performance of IUDs?" *Contraception*, **41**:495, 1990.

Nonsurgical Sterilization in China

A potentially reversible method of male sterilization that does not involve surgery has shown great success in Chinese tests so far: The method, in which a small amount of liquid polyurethane is injected into the vas deferens to form a plug, has been tried by 12,000 men, including 1,000 who have been followed for five years and 2,600 who have been followed for three years.[1] As yet, no accidental pregnancies have resulted, and the incidence of complications (such as local infection or hematoma) has been low. In addition, the researchers believe that if a man wants to have more children, simple removal of the plastic plug will restore fertility. So far, 86 men have asked for the plugs to be removed, and 51 have subsequently impregnated their wives, including all 31 who have had their sterilizations reversed for at least one year. The researchers conclude that the "percutaneous injection of polyurethane elastomer provides a nontraumatic method of vas occlusion with several advantages over surgical vasectomy."

1. Z. Sheng-cai, "Vas Deferens Occlusion by Percutaneous Injection of Polyurethane Elastomer Plugs: Clinical Experience and Reversibility," *Contraception*, **41**:453, 1990.

Note to Authors

International Family Planning Perspectives is a peer-reviewed quarterly journal publishing research articles about the developing world that are intended to be of assistance to professionals in the fields of fertility and family planning, maternal and child health and population policy. The editors invite researchers, policymakers and program operators from around the world to submit articles on such topics as contraceptive practice and research; population growth; fertility levels, trends and determinants; childspacing; public policies and legal issues affecting family planning and childbearing; family planning program operation, development and evaluation; information, education and communication activities; sexually transmitted diseases; and reproductive, maternal and child health. Manuscripts should be sent to the address below, and should include the complete affiliation, address, telephone number and Fax number (if possible) of the author with whom we are to correspond.

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International Family Planning Perspectives es una revista trimestral que publica monografías sobre el mundo en desarrollo destinadas a asistir a profesionales en las esferas de fecundidad y planificación familiar, salud maternoinfantil y política de población. Invitamos a investigadores y responsables de políticas y programas de todo el mundo a que presenten artículos sobre temas tales como práctica e investigación en materia de anticonceptivos; crecimiento demográfico; niveles, tendencias y determinantes de la fecundidad; espaciamento de los hijos; políticas oficiales y cuestiones jurídicas que afecten la planificación familiar y la fecundidad; aplicación, elaboración y evaluación de programas de planificación familiar; actividades de información, instrucción y comunicación; enfermedades transmitidas sexualmente y salud reproductiva y maternoinfantil. Los originales deben enviarse a la dirección que figura más abajo, debiendo constar en ellos filiación completa, domicilio postal, teléfono y, de ser posible, numero de Fax del remitente.

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Scholastic and Personality Characteristics Of Only Children and Children with Siblings in China

"Our study offers no support for the belief that Chinese only children are 'little emperors.' Overall, we found few differences in virtue and competence between children who had siblings and those who did not."

By Dudley L. Poston, Jr., and Toni Falbo

Summary

A study of the effects of being an only child on academic achievement and personality characteristics was undertaken in 1987 among Chinese schoolchildren in Changchun, Jilin Province. The findings did not support reports in the Chinese and Western press that China's one-child-per-family policy is creating a generation of spoiled children. Overall, the only children performed significantly better than children with siblings on academic measures but scored similarly on personality ratings. When the children were subdivided by urban vs. rural residence and by grade level, urban children without siblings scored significantly higher than their peers with siblings on academic measures; there were no differences on these measures among the rural children. Although the children's teachers tended to rate the only children as more virtuous and more competent than the children with siblings, the parents' ratings of their own children on the same scales indicated no significant differences between the two groups.

Introduction

For well over a decade, the People's Republic of China has viewed population control as fundamental to the realization of the "four modernizations" of agriculture, industry, defense, and science and technology. In 1979, China established the "one-child" policy, which is expressed in the official slogan "one child is best, at most two, never a third."[1] The policy is strictly enforced only in urban areas, however; considerably more leniency is permitted in the vast rural areas where more than 70 percent of the population lives.[2] By limiting growth so that China's population does not exceed 1.2 billion by the end of the century, the nation's leaders hope to stimulate economic development and substantially improve the standard of living.[3] To date, the one-child policy appears to have been very successful in urban areas: Reports indicate that in recent years, first births have made up 98 percent of all births in Shanghai, 90 percent of those in Tianjin and 86 percent of those in Beijing.[4] However, according to other sources, "there has been much less than full compliance with the official one-child policy."[5]

Recent reports from China have suggested that the one-child-per-family policy may be producing a generation of "little emperors" (the Chinese equivalent of spoiled brats). Many Chinese are expressing the fear that in the years ahead China may very well have millions of spoiled and maladjusted only children who do not possess the virtues that Chinese culture values so highly. In December 1987, for example, *Time* magazine reported that there "may be hundreds of thousands, perhaps millions, of . . . [these little emperors] throughout China . . . [and] the reason [is] Beijing's stringent one-child-per-couple policy. . . . [These millions of little emperors] have been swaddled in the love of their parents and grandparents; as a result, many Chinese fear they are growing up spoiled, selfish and lazy."[6] Indeed, despite the policy's marked demographic and family planning successes, its purported negative effects on the children of China have been so widely reported that they have become familiar to layperson and scholar alike, both in China and in the West. Yet, to date, this issue has not been systematically examined, chiefly because of a lack of sufficiently detailed data on the scholastic performance and personality characteristics of Chinese schoolchildren.

Studies in Western countries have found that only children do not differ significantly from children with siblings in adjustment, sociability or other personality characteristics.[7] However, only children tend to outperform children with siblings on various measures of scholastic performance, particularly when they are compared with last-born children or children with four or more siblings.

A recent review of the Chinese literature on only children published between 1980 and the first part of 1988 provides a picture that is not entirely clear.[8] Some articles report that only children are deficient, particularly in moral character; others indicate that they differ little from other children. Still other studies note that only children surpass children with siblings in academic performance.

There are at least three reasons for these mixed results. First, each study used unique methodological approaches; for example, several studies analyzed moral development, but no two studies measured it in the same way. Second, the size of the samples was usually quite small, ranging from about 30 to 100 children. Third, many of the studies simply compared the characteristics of only children with those of children with siblings, and did not consider relevant background characteristics such as the parent-child relationship and the socioeconomic level, structure and size of the family. In addition, most of the previous research was conducted in urban areas of Beijing, Shanghai and Tianjin, so differences resulting from urban vs. rural residence could not be addressed.

In this article, we examine the accuracy of assertions in the media that Chinese only children are spoiled, selfish, lazy and maladjusted. If these assertions are true, being an only child should be negatively associated with virtue and competence and with academic performance. We have tried

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to improve on the available literature on only children in three ways. First, we selected a large, heterogeneous sample, including children from both urban and rural areas. Second, we used regression procedures that allowed us to consider relevant background variables while comparing only children with children with siblings. Third, our sample was drawn from a relatively understudied population: schoolchildren living in Changchun, the capital of Jilin Province. Changchun, one of northeastern China's three leading industrial cities,[9] also includes extensive farmlands.*

Methodology

Our investigation was undertaken in collaboration with demographers and sociologists from the Population Research Institute of Jilin University. After reviewing the results of a pilot survey of 165 children conducted in December 1986 and January 1987, we revised the survey instruments and proceeded with the full survey of 1,465 schoolchildren in June and July of 1987. Eight schools took part in the study, five in the urban part of Changchun (78 percent of the students), and three in the rural part (22 percent of the students). Because we wanted to survey students born before 1979, the year when the one-child policy was initiated, as well as those born after the policy was in place, we sampled fifth graders (46 percent of the sample) and first graders (54 percent).

The survey questionnaire asked for a variety of information: Each child's teacher provided the child's scores on mathematics and Chinese language examinations and rated the child on a checklist of 31 personality attributes. The child's mother (or father) provided detailed background information on family size; the education, job and earnings of each parent; the long-range expectations of each parent for the child; and how often each parent helped the child with schoolwork. The mother or father also completed the checklist of personality attributes.

Table 1. Checklist of 31 personality attributes and their polar opposites

	Attributes	Polar opposites
1.	Is competitive	Is not competitive
2.	Is rough	Is gentle
3.	Does not cry easily	Cries very easily
4.	Gives up easily	Does not give up easily
5.	Is not easily hurt	Is easily hurt
6.	Does not let others know how he/she feels	Lets others know how he/she feels
7.	Is concerned about being liked	Is not concerned about being liked
8.	Can't make decisions easily	Can make decisions easily
9.	Is selfless	Is selfish
10.	Does not care about others' feelings	Cares about others' feelings
11.	Has definite views	Has no definite views
12.	Is incompetent	Is competent
13.	Is kind	Is cruel
14.	Always needs adult help	Never needs adult help
15.	Is always certain he/she can do what he/she tries to do	Is never certain he/she can do what he/she tries to do
16.	Is never helpful to others	Is always helpful to others
17.	Always acts as a leader	Never acts as a leader
18.	Is always willful	Is never willful
19.	Is timid	Is brave
20.	Respects property	Does not respect property
21.	Is never aggressive to others	Is aggressive to others
22.	Respects elders	Does not respect elders
23.	Is not fascinated with fancy dress	Is fascinated with fancy dress
24.	Does not like to take part in manual labor	Likes to take part in manual labor
25.	Is modest	Is not modest
26.	Always lies	Never lies
27.	Likes to join in collective activity	Does not like to join in collective activity
28.	Does not pay attention in class	Pays attention in class
29.	Likes to answer questions	Does not like to answer questions
30.	Copies homework of others	Does not copy homework of others
31.	Shares belongings with others	Does not share belongings with others

The checklist shown in Table 1 is an instrument we developed to gauge the degree to which Chinese schoolchildren have personality attributes deemed desirable in their culture; some of the attributes had been used in earlier Chinese studies that compared only children with children with siblings.[10] We added others to the instrument on the basis of recommendations from, and tests conducted with, Chinese students pursuing social science graduate degrees in the United States. The checklist presented each attribute in terms of polar opposites.† For example, the teacher or parent was asked to check whether the child was selfish or selfless, and respectful or disrespectful to elders.

To evaluate the degree of reliability of the checklist ratings, we performed three separate statistical analyses of the data. First, we compared the ratings of the parents and the teachers to determine their degree of similarity. We reasoned that some degree of consensus should exist between these two sets of ratings, although we also felt that there should be only a partial overlap between them because the observations of parents and teachers usually occur in different contexts. We found that the ratings given by the parents were quite similar to those given by the teachers.

Second, we considered that if the checklist assessed something about the child that was stable and consistent over time, then the two sets of ratings of the same child made at different times would be related. By comparing the data from the pretest with data from the actual survey (which was conducted seven months later), we were able to identify 51 cases in which the same teacher evaluated the same student at two points in time. All but one of these

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*The spatial definitions of Chinese cities, unlike those of cities in the West, include both the cities themselves and the surrounding suburban and rural areas. In 1985, Changchun had an urban population of 1.8 million residing in an area of 1,116 square kilometers; the city's suburban counties had a population of about four million living in an area of 17,765 square kilometers (see: State Statistical Bureau, *City Statistical Yearbook of China: 1985*, Statistics Press, Beijing, 1985).

†According to many Chinese scholars, most Chinese respondents prefer to use checklists rather than rating scales when evaluating personality characteristics. When we pretested many of the items on the checklist in Beijing in 1985, we asked the teachers to indicate where each child was located along a continuum connecting two polar attributes. Most had difficulty making gradations of judgments about the attributes of each child; most simply checked one or the other polar attribute.

test-retest correlations were statistically significant, with an average correlation of about 0.43.

Third, we used factor analysis to determine the degree of similarity between the rating patterns generated by the teachers and by the parents. Here, we reasoned that if the factor analyses produced similar underlying dimensions or traits, this would suggest that the two groups of adults were basing their ratings of the children on similar concepts. The two factor analyses produced very similar structures with two main dimensions; we have labeled these "virtue" and "competence." The personality attributes used to define these factors are shown in Table 2.

We then used the factor analysis results to construct two sets of scales, one each for the teachers and the parents, which we use here as indicators of the personality traits of the children. We totaled the actual scores of the 15 attributes that defined virtue (see Table 2), as specified by the teachers, to form a scale; a second virtue scale using the attributes specified by the parents was created in a similar manner. The range of values on each virtue scale was 1–15. The same method was used to construct parent and teacher scales for competence. These two scales ranged in value from zero to nine. For both samples, the alpha coefficient for each scale was at least 0.80, indicating a high degree of inter-item consistency. Also, the two sets of virtue and competence scale scores were positively and significantly correlated in both samples, indicating that both scales measure personality aspects considered desirable in China.

Results

To determine whether sibling status has a significant effect on a child's performance on examinations in mathematics and Chinese language and on teacher and parent evaluations of a child's virtue and competence, we first compared the mean scores of only children and children with siblings on each of these outcomes. We then performed a separate regression analysis for each of the outcomes using selected independent variables, including sibling status.

The first two rows of data in Table 3 present mean scores of all the only children and all the children with siblings on each scholastic achievement and personality variable. Overall, the only children performed significantly better than children with siblings on mathematics tests and Chinese language examinations. However, there were fewer differences between only children and children with siblings on the personality variables. The only children were evaluated by their teachers as significantly more virtuous and competent than were the children with siblings, but according to the evaluations given by the parents, the only children and the children with siblings were not significantly different from each other in virtue and competence.

The next four sets of data in the table show the mean scores for only children and children with siblings on the six scholastic achievement and personality outcomes by rural vs. urban residence and by grade level. When residence and grade level were controlled, the differences between the mathematics and language scores of the only children and those of the children with siblings were significant only among the urban children. In the rural areas of Changchun, only children and children with siblings did not differ significantly in scholastic achievement.

When residence and grade level were controlled, the only children and the children with siblings varied significantly on only one personality outcome. Teachers evaluating urban first graders rated those who were only children as significantly more virtuous than those with siblings. There were no other statistically significant differences by sibling status in any of the residence or grade-level subgroups. According to our findings, in each of those subgroups the only children and the children with siblings were much more similar than they were different.

Table 2. Personality attributes that define virtue and competence

Virtue

- Is gentle (2)
- Is concerned about being liked (7)
- Is selfless (9)
- Cares about others' feelings (10)
- Is kind (13)
- Is helpful (16)
- Is never willful (18)
- Respects property (20)
- Is never aggressive (21)
- Respects elders (22)
- Is modest (25)
- Never lies (26)
- Pays attention in class (28)
- Does not copy homework (30)
- Shares belongings (31)

Competence

- Is competitive (1)
- Does not give up easily (4)
- Can make decisions easily (8)
- Has definite views (11)
- Is competent (12)
- Is confident (15)
- Acts as a leader (17)
- Is brave (19)
- Answers questions actively (29)

Note: Numbers following each item refer to personality attributes on the checklist in Table 1.

Next, we evaluated the degree to which being an only child is associated with each of the six scholastic achievement and personality outcomes. For each outcome, we performed a regression analysis to examine the effects of five independent variables in addition to sibling status that could have an effect on one or more of the scholastic and personality measures. Those five variables were the sex of the child, paren-

Table 3. Mean scores of only children and children with siblings on six scholastic and personality outcomes, by residence and grade level, Changchun, China, 1987

Residence and grade	N	Achievement		Virtue rating		Competence rating	
		Math	Chinese	Teacher	Parent	Teacher	Parent
All	1,458†						
Only child	492	92.6	93.2	12.2	11.8	5.1	5.6
A sibling	966	83.1**	84.9**	11.7**	12.0	4.7*	5.7
Urban							
First grade							
Only child	364	95.6	97.1	12.4	11.8	5.2	5.6
A sibling	199	93.3**	95.5**	11.9*	11.7	4.6	5.9
Fifth grade							
Only child	72	86.2	86.3	11.8	11.7	4.7	5.3
A sibling	415	82.1*	86.2	11.8	12.2	4.7	5.8
Rural							
First grade							
Only child	46	80.1	75.3	11.2	11.6	5.3	5.8
A sibling	173	81.3	77.6	10.6	11.5	4.6	5.6
Fifth grade							
Only child	5	80.4	82.4	11.6	12.2	5.0	6.6
A sibling	175	75.9	76.9	12.2	12.3	5.1	5.6

*Difference in means between children with siblings and only children significant at $p<0.05$.

**Difference in means between children with siblings and only children significant at $p<0.01$.

†The Ns for urban and rural children add to 1,449 because nine children did not indicate residence or grade.

Table 4. Unstandardized regression coefficients for six scholastic and personality measures, by selected background characteristics

Characteristics	Achievement		Virtue rating		Competence rating	
	Math (N=1,358)	Chinese (N=1,358)	Teacher (N=1,361)	Parent (N=1,360)	Teacher (N=1,361)	Parent (N=1,360)
Only child†	1.77*	0.86	0.55*	0.03	0.44**	–0.26
Parental education‡	1.31**	1.05**	–0.00	–0.07	0.11**	0.00
Sex of child§	2.10**	2.84**	1.77**	1.02**	0.43**	0.32**
Parental help ††	0.24	0.36	0.06	0.08	0.00	0.01
Parental expectations‡‡	0.62**	0.85**	0.09*	0.08*	0.12**	0.23**
Nuclear family§§	0.05	–0.12	–0.17	–0.04	0.29	0.10
Residence*†	–6.04**	–11.07**	–0.50*	–0.23	0.55**	–0.16
Grade*‡	–8.88**	–6.89**	0.31	0.41**	0.10	–0.12
Constant	99.26	104.93	11.09	11.33	3.41	5.91
Adj. R^2	0.313	0.361	0.107	0.050	0.025	0.035

*Coefficient significant at $p<0.05$. **Coefficient significant at $p<0.01$.

†A sibling=0; only child=1. ‡Combined score, range 2–13 §Male=1; female=2.

††Combined range from 2 (neither parent ever helps) to 6 (both parents always help).

‡‡Combined range from 2 (neither parent has any expectations for child) to 8 (both parents expect child to be someone very important).

§§No=0; yes=1 *†Urban=1; rural=2. *‡First grade=1; fifth grade=2.

tal education, parental help with homework, parental expectations for the child and whether the child lived in a nuclear family. The two control variables were child's residence and child's grade in school.

Multiple regression analysis indicated that performance on mathematics examinations is positively associated with being an only child, net of the effects of the other independent and control variables. Being an only child is also significantly associated with teachers' evaluations of virtue and competence: Only children tended to receive higher scores from their teachers on these personality dimensions than did children with siblings. The results shown in Table 4 in no way support the notion that only children in China are spoiled and selfish, lack virtue and are poor students.

If sibling status is not a consistent predictor of Chinese schoolchildren's scholastic and personality outcomes, what does predict how well a child will do? Although a full answer to this question is beyond the scope of this article, our findings do provide some indications. The results in Tables 3 and 4 show that the urban schoolchildren performed better than the rural schoolchildren on scholastic examinations. Table 4 also indicates that girls scored higher than boys on both scholastic achievement tests and personality evaluations. Moreover, parental education is positively associated with the child's performance on both Chinese and mathematics examinations. Finally, the greater the parental expectations for the child's future, the higher the child's performance.

Conclusion

Our study offers no support for the belief that Chinese only children are little emperors. Overall, we found few differences in virtue and competence between children who had siblings and those who did not. When statistically significant differences were found, they tended to indicate that only children had more positive outcomes than children with siblings. For example, our results indicate that only children in urban areas tend to outperform their peers with siblings on both mathematics tests and Chinese language examinations. The results of this study are in many ways similar to those of Western studies that examined the effects of sibling status.

Fears about Chinese children who lack siblings may be based on the assumption that Chinese children spend most of their preschool years alone with their mothers, without the give-and-take of sibling companionship. However, most of the children in the Changchun sample had spent an overwhelming part of their preschool years—six days a week for more than eight hours a day—in group care, in direct interaction with their peers. The parents of these only children appear, therefore, to have had little opportunity to spoil them. Nevertheless, these results are from only one region in one province of China and cannot be generalized to the country as a whole. Additional investigations of the effects of sibling status are needed, especially in the vast rural areas of the country where so many Chinese people live.

References

1. "Population," *China News Analysis*, No. 1163, Sept. 14, 1979, p. 5.

2. H. Y. Tien, "Second Thoughts on the Second Child: A Talk with Peng Peiyun," *Population Today*, Vol. 17, No. 4, Apr. 1989, p. 6.

3. J. Banister, *China's Changing Population*, Stanford University Press, Stanford, Calif., 1987.

4. B. Gu, D. L. Poston, Jr., and J. Shu, *The People's Republic of China Population Data Sheet*, The University of Texas Printing Division, Austin, 1987.

5. M. K. Whyte and S. Z. Gu, "Popular Response to China's Fertility Transition," *Population and Development Review*, **13**:471, 1987.

6. H. G. Chua-Eoan, "Bringing up Baby, One by One: A Single-Child Policy Delivers Millions of Tiny Tantrums," *Time*, Dec. 7, 1987.

7. T. Falbo and D. F. Polit, "A Quantitative Review of the Only Child Literature: Research Evidence and Theory Development," *Psychological Bulletin*, **100**:176, 1986; D. F. Polit and T. Falbo, "Only Children and Personality Development: A Quantitative Review," *Journal of Marriage and the Family*, **49**:309. 1987; ——, "The Intellectual Outcomes of Only Children," *Journal of Biosocial Science*, **20**:275, 1988; J. Blake, "The Only Child in America: Prejudice Versus Performance," *Population and Development Review*, 7:43, 1981; and ——, *Family Size and Achievement*, University of California Press, Berkeley, 1989.

8. X. Feng, "An Analysis of Only Children in China," *Jianghai Journal*, **1**:4, 1990.

9. D. L. Poston, Jr., "The Urban Hierarchy of Dongbei," *Proceedings of the International Conference on Urbanization and Urban Population Problems (ICUUPP)*, Organizing Committee of the ICUUPP, Tianjin, 1987, p. 480; and D. L. Poston, Jr., and B. Gu, "The Giant Cities of China: Patterns of Dominance and Integration," in B. Hamm, ed., *Progress in Human Ecology*, Mittal Publications, New Delhi, India, 1990, forthcoming.

10. C. C. Ching, "The One-Child Family in China: The Need for Psychosocial Research," *Studies in Family Planning*, **13**:208, 1982; D. L. Poston, Jr., and M. Yu, "Quality of Life, Intellectual Development, and Behavioural Characteristics of Single Children in China: Evidence from a 1980 Survey in Changsha, Hunan Province," *Journal of Biosocial Science*, **17**:127, 1985; and T. Falbo et al., "Only Children in China," Texas Population Research Center Papers, No. 8,023, The University of Texas at Austin, Population Research Center, Austin, 1986.

Resumen

En 1987 se realizó un estudio de los efectos de ser hijo único sobre los logros educacionales y la formación de la personalidad entre escolares chinos en Changchun, Provincia de Jilin. Las conclusiones no corroboraron los resultados publicados en la prensa china y occidental de que la política de China de limitar las familias a un solo hijo está creando una generación de niños consentidos. En términos generales, el desempeño escolar de hijos únicos era considerablemente superior a el de los hijos con hermanos, pero en cuestiones de personalidad, los resultados fueron similares. Cuando se subdividió a los niños de acuerdo con su residencia, urbana o rural, y por nivel educacional los

(Continued on page 54)

Initial Acceptability of Contraceptive Implants in Four Developing Countries

In Bangladesh and Nepal, women with no education were more interested in trying NORPLANT contraceptive implants than were women with some education, while in Haiti, women with the most education were most interested in NORPLANT.

By Thomas T. Kane, Gaston Farr and Barbara Janowitz

Summary

An analysis of 2,586 potential acceptors of hormonal contraceptive implants (NORPLANT®) interviewed at 10 family planning clinics in Bangladesh, Haiti, Nepal and Nigeria reveals that interest in trying NORPLANT is high: Between 48 percent and 67 percent of respondents who had come to the clinics to start contraception or to obtain information about NORPLANT and were considered potential implant acceptors expressed an interest in trying the method. Large proportions of women identified effectiveness, reversibility and convenience as the implants' most attractive aspects. Women in their late 20s or older who had had a few children and were interested in spacing births for at least several years or in limiting births, but were not ready for sterilization, were most likely to express interest in NORPLANT. The findings also point out the need for thorough counseling to reduce the apprehensions that women and their husbands may have about the method, such as fear of side effects or of the insertion or removal procedure.

Introduction

The continuing search for more convenient, effective and culturally acceptable methods of contraception has led to the development in recent years of a series of long-acting steroidal contraceptive methods. One of these is the subdermal hormonal implant system called NORPLANT, which is in the early phases of introduction in a number of developing countries. NORPLANT is a low-dose, progestin-only contraceptive tested in clinical or preintroduction trials involving over 55,000 women in 44 countries. As of January 1990, it had also been approved for programmatic use in at least 14 countries, where over 400,000 more women have used it.

NORPLANT works by allowing the steady release of low levels of levonorgestrel from six capsules implanted beneath the skin of the user's upper arm. Only a small incision is needed to insert or remove the implant. Within 24 hours of its placement in the arm, NORPLANT is releasing levonorgestrel at levels high enough to prevent pregnancy, and it continues to do so for more than five years. In the majority of menstrual cycles, the circulating level of levonorgestrel prevents ovulation; in the relatively rare cycles in which ovulation does occur, however, the implant prevents pregnancy by thickening the cervical mucus (and thus impeding sperm penetration) and by suppressing endometrial development. Users usually begin to ovulate and become capable of conceiving shortly after the capsules have been removed.[1]

During the past decade, an increasing body of research has focused on the introduction and acceptability of new contraceptive methods in various countries. A major objective of such research is to provide feedback to family planning program managers and biomedical researchers, to enable them to modify programs and technology accordingly.[2] Although preintroductory clinical trials have examined continuation rates and user satisfaction, questions remain about the potential popularity of the method among contraceptive users.

The success of any new method depends to a large extent on its acceptability. A user's initial reactions to a method will depend, in part, on what information the individual has received about the method and how that information has been presented. Numerous factors may affect a woman's interest in and decision to adopt a new method such as NORPLANT: These include the method's side effects, insertion and removal procedures, effectiveness, reversibility and contraindications, the woman's desire for more children, concerns about her fertility following use and correct knowledge of how the method works and her husband's attitude toward the method, as well as rumors about the method and religious considerations.

A previous publication has outlined the

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various types of attitudinal and behavioral studies of contraceptive acceptability and the value and limitations of each methodological approach.[3] To date, most studies of NORPLANT's acceptability have focused on acceptors' characteristics, attitudes, perceptions and degree of satisfaction, and on their rate of continuation or discontinuation.[4] However, with the exception of the clinic-based surveys reported in this article, very little has been done to look at the interest in or potential demand for NORPLANT among users most likely to be considering a new method—women seeking family planning services. Research on NORPLANT so far has generally failed to examine the earliest stage of contraceptive adoption—initial acceptability. This stage includes the family planning client's first exposure to information about the method, her subsequent interest or lack of interest in it and her decision whether or not to use it.

Our study attempts to determine the level of interest in trying NORPLANT among women visiting family planning clinics in Bangladesh, Haiti, Nepal and Nigeria. The objectives of the surveys that we conducted were to determine the impact of social and demographic factors on interest in contraceptive implants, to discover what women interested in the method liked about it and to learn what women not interested in the method disliked about it. Such findings may help family planning program administrators and service providers identify potential NORPLANT acceptors, as well as enable providers to develop programs that can help overcome some of the obstacles to acceptance.

Methodology

As part of the recruitment for NORPLANT preintroductory clinical trials in 1985 and 1986, NORPLANT Acceptability Surveys were conducted at 13 family planning clinics in Bangladesh, Haiti, Nepal and Nigeria. An effort was made to ensure that the questionnaires were as uniform as possible at all sites while at the same time meeting the needs of each participating clinic. All nonsterilized women of reproductive age visiting the clinic for any contraceptive or health-related reason were eligible for interview.[*] Respondents were asked about several background characteristics: their age, education, desired family size, current and past contraceptive experience, breastfeeding status, access to family planning services and previous knowledge of NORPLANT, as well as the source of any such information. Centers in Nigeria and Haiti also collected information on the respondents' religion, literacy and willingness to pay for the implants.

As part of the interview, respondents were read a fact sheet that included information on how NORPLANT works, its effectiveness, its possible side effects and how it is inserted and removed. No special fact sheet was provided for other contraceptive methods offered at these clinics (e.g., the pill, condom, IUD, injectables, and male and female sterilization), but normal informational materials and counseling were available. The same fact sheet was read to all women interviewed in each country. Afterwards, each woman was asked if she would be interested in using the contraceptive implant and what additional information she would like to have. She was then asked an open-ended question on her reasons for wanting or not wanting to use the method. The respondent was also asked to indicate which of a number of preselected reasons were important in her decision. (These responses had been identified during pretests of the survey instrument and were based on responses to an open-ended question on reasons for wanting or not wanting to try NORPLANT.)

Although the circumstances and services provided varied somewhat from clinic to clinic, the sites participating in the survey were primarily full-service family planning clinics; most provided oral contraceptives, condoms, IUDs and female sterilization procedures, and at least some offered injectables and male sterilization. (Some also provided maternal and child health services.)

Fieldwork began at the first two clinics in February 1985 and was completed at all sites by July 1986. For reasons of cost and logistics, the total number of interviews at each clinic was not to exceed five times the number of NORPLANT acceptors who were enrolled in the clinical trials being organized at each facility. Interviews were carried out only during the recruitment period for the clinical trials, and were conducted upon a woman's arrival at the clinic. The questionnaires were administered by trained social workers and interviewers at all sites except for one in Nepal, where the interviews were also conducted by motivators or health workers at satellite clinics in surrounding communities where participants in the NORPLANT trials were being recruited.

For this comparative analysis, data were pooled after we excluded three of the 13 participating centers because of data collection problems: one Nigerian center, because questionnaires were completed almost solely for NORPLANT acceptors; one in Bangladesh, because apparently only women eligible to receive the method (according to the clinical trial criteria) were interviewed; and one in Haiti, because the majority of acceptors were not interviewed. Thus, the sample consisted of women who had visited two clinics in Bangladesh, two clinics in Haiti, two clinics in Nepal and four clinics in Nigeria.

Our original intention was to interview a random sample of women coming to each of the clinics for family planning services. However, in practice, each center ended up interviewing a very different subgroup of women. Undoubtedly, crowded conditions caused the clinics to simplify their procedures for carrying out the interviews. To increase the comparability of the samples, we confined the analysis to the subgroup of women most likely to be interested in NORPLANT. These "potential acceptors" are women coming to the facility to start contraceptive use, to switch methods or to obtain information specifically about NORPLANT. Women who were seeking sterilization are included as potential acceptors. However, we excluded women coming for contraceptive resupply or for maternal health care, and those bringing a child for a health care visit. The subgroup of potential acceptors varied in relative size from clinic to clinic, but confining the analysis to this group increases the comparability of the women across study centers.

Although all NORPLANT acceptors should have been interviewed before they began using the method, a few were not included or recorded as such in the survey, either because the specified sample size of respondents was reached before the target number of clinical trial participants was achieved or because information on some women who began using the method after completion of the interview was not noted on the questionnaire.

Of the 5,039 survey respondents, 2,586 potential acceptors were identified and included in this analysis; 973 of these actually began using the implants. Overall, more than 90 percent of the women who ended up participating in the clinical trials at these 10 centers had been identified through the surveys as potential acceptors. Thus, our definition of a potential acceptor identified the vast majority of women interested in using contraceptive implants.

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[*] To be part of the clinical trials, women had to be aged 18–40, sexually active, not currently pregnant and readily accessible for follow-up; they could not have liver disease, jaundice, sickle-cell anemia, herpes gestationis, pelvic inflammatory disease, cancer, thromboembolic disease or hypertension; they must have had at least one pregnancy and must not have used injectable contraceptives in the previous six months. Additionally, in Haiti and Nigeria, women could not be exclusively breastfeeding a child, while in Bangladesh and Nepal, they could not be breastfeeding at all.

Results

Table 1 reveals some variations in the social and demographic characteristics of potential NORPLANT acceptors. On average, those in the Nigerian sample were about 3–5 years older, had almost two more living children, had had around twice as many years of schooling and were much more likely to want additional children than potential acceptors in Bangladesh, Haiti and Nepal. About one-fourth of women in Bangladesh and Nigeria and almost half of those in Haiti and Nepal reported that they were currently breastfeeding their youngest child.

Between 57 percent and 66 percent of the women in Bangladesh, Nepal and Nigeria had come to the clinic to start contraceptive use, compared with 85 percent of those in Haiti. The proportion whose main reason for coming to the clinic was to get information on NORPLANT ranged from less than one percent in Nigeria to 18 percent in Bangladesh. Some 32–37 percent of the women in Bangladesh, Nepal and Nigeria were practicing contraception, compared with only seven percent in Haiti.

The social and demographic composition of the four samples may be very different from that of the general population of women in union. For example, compared with women interviewed in the 1985 Bangladesh Demographic and Health Survey,[5] women in this study were younger, better educated, more likely to have no children or one child and less likely to have four or more children. Variations may also have been caused by differences in the type of women who visit family planning clinics compared with the general population. Morever, women who go to such facilities may not represent all women seeking family planning services, because of such factors as the location of the clinic (e.g., in an affluent district or urban slum area) or the services it provides.

About half of potential acceptors in Bangladesh and Nepal (52–53 percent) had heard about NORPLANT before the interview, compared with almost 60 percent in Nigeria and only 40 percent in Haiti. In the last two countries, the women were also asked how long before their visit they had heard of the method. More than half of the Nigerian women who said they had heard about it previously reported having first heard about NORPLANT on the same day as the interview, while virtually none (one percent) of the Haitian women gave this response. In contrast, only 21 percent of potential acceptors in Nigeria said they had heard about it more than two weeks before the interview, compared with 29 percent of Haitian women.*

Table 1. Means and percentage distributions of background characteristics of potential NORPLANT acceptors, by country

Characteristic	Bangladesh (N=821)	Haiti (N=411)	Nepal (N=814)	Nigeria (N=540)
MEANS				
Age	26.3	27.9	27.4	30.9
No. of living children	3.0	3.2	2.7	4.6
Education (in yrs.)	3.6	2.6	2.6	6.9
Age of youngest child	2.4	1.[illegible]	2.0	1.4
No.of additional children wanted				
All women	0.5	0.6	0.4	1.4
Women wanting more children	1.2	1.3	1.2	2.2
% DISTRIBUTION				
Age-group				
<25	31.5	29.8	35.4	10.9
25–29	41.5	35.4	29.8	27.8
30–34	19.4	20.4	19.5	30.9
≥35	7.6	14.4	15.3	30.4
No. of living children				
0–1	15.8	14.1	16.5	7.4
2	29.2	26.5	37.3	7.6
3	24.5	22.1	24.6	13.6
4–5	23.8	26.8	17.4	35.3
≥6	6.7	10.2	4.2	36.1
Education (yrs.)				
0	46.8	43.1	70.0	23.8
1–7	31.2	49.9	10.7	38.1
≥8	22.0	7.0	19.3	38.1
Age of youngest child				
<1	18.9	35.3	28.6	35.2
1	24.8	30.9	24.1	30.0
≥2	56.3	33.8	47.3	34.8
Breastfeeding status				
Yes	23.0	46.6	44.4	27.6
No	77.0	53.4	55.6	72.4
Desire for more children				
Wants no more	61.2	51.2	63.0	35.6
Wants more				
After 5 yrs.	31.8	36.8	6.3	18.1
Within 5 yrs.	7.0	12.0	30.7	46.3
Additional children wanted				
0	61.2	51.2	63.0	35.6
1	29.5	34.6	30.8	19.6
≥2	9.3	14.2	6.2	44.8
Main purpose of clinic visit				
Start use	58.2	84.9	56.8	65.7
Switch methods	24.2	6.8	32.8	33.5
Find out about NORPLANT	17.6	8.3	10.4	0.8
Contraceptive use-status				
Using	32.2	6.8	37.0	34.8
IUD	8.3	0.7	4.9	10.4
Pill	17.7	1.5	18.8	7.4
Injectables	1.3	1.5	5.9	0.9
Condom	3.0	2.7	5.8	2.8
Withdrawal	0.6	0.0	0.5	4.6
Other	1.3	0.4	1.1	8.7
Not using	67.8	93.2	63.0	65.2
Total	100.0	100.0	100.0	100.0

Between half and two-thirds of potential acceptors said they would be interested in trying NORPLANT (Table 2—page 52). The proportion who were undecided varied considerably, from only two percent in Haiti and four percent in Nigeria to 11 percent in Nepal and 20 percent in Bangladesh (not shown). Many Bangladeshi women were concerned that their husbands might not approve of the method, and could not say whether they were interested until consulting them.

Because contraceptive use and method choice have been found to vary significantly with a woman's age, parity, fertility desires and education, we looked at the association of these variables with the level of interest in trying NORPLANT. Table 2 shows that in Nepal and Nigeria, potential acceptors 35 years of age or older were nearly twice as likely as those under 25 to be interested in NORPLANT (61 percent vs. 35–36 percent); likewise, those with six or more living children and those who wanted no more children were substantially more likely than those with few children and those who wanted more children to be interested in the method. According to chi-square tests, the associations between women's interest in trying NORPLANT and these characteristics were statistically significant ($p<0.05$).

In Bangladesh as well, interest in NORPLANT was significantly ($p<0.05$) associated with having many living children and with wanting fewer than two additional children. In Haiti, on the other hand, only age was significantly associated with interest in trying the method. In Bangladesh and Nepal, women with no education were more likely to be interested in trying the implants than were

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*It was surprising that such a substantial proportion of Haitian respondents (and smaller proportions of those in the other countries) had heard of the method well before their clinic visit. No NORPLANT media campaigns were under way in the areas where the acceptability surveys were conducted. In addition, the clinical trials were the very first such trials to be organized in these countries and were carried out on a small scale. Thus, most information on NORPLANT must have been passed by word of mouth or, occasionally, by health or social workers who were recruiting participants for the preintroductory clinical trials.

Table 2. Percentage of potential acceptors who were interested in trying NORPLANT, by background characteristics and country

Characteristic	Bangladesh	Haiti	Nepal	Nigeria
Total	**54**	**67**	**48**	**52**
Age-group				
<25	49	66	35	36
25–29	55	70	50	46
30–34	59	77	56	54
≥35	56	48	61	61
No. of living children				
0–1	32	60	29	35
2	51	70	43	34
3	61	72	49	37
4–5	62	66	68	50
≥6	66	57	68	66
Desire for more children				
Wants no more	60	65	53	72
Wants more				
After 5 yrs.	54	75	33	63
Within 5 yrs.	14	51	35	33
No. of additional children wanted				
0	60	65	53	72
1	53	69	37	52
≥2	26	69	26	37
Education (yrs.)				
0	60	64	51	52
1–7	50	67	42	54
≥8	48	79	40	50
Youngest child's breastfeeding status and age (mos.)				
Breastfed				
<12	30	52	20	46
Not breastfed				
<12	73	75	72	49
12–23	54	76	40	55
≥24	56	70	64	55
Contraceptive-use status				
Using	62	64	55	49
IUD	54	*	55	39
Pill	64	*	72	45
Injectables	*	*	29	*
Condom	60	*	30	53
Withdrawal	*	*	*	44
Other	*	*	*	64
Not using	50	67	43	54
Prior knowledge of NORPLANT				
Yes	81	71	63	55
No	25	64	30	47
Timing of knowledge				
Day of interview	u	*	u	45
1–14 days before	u	65	u	73
2–4 weeks before	u	69	u	88
>4 weeks before	u	79	u	60
Source of knowledge				
Friend/relative	80	67	58	75
Clinic	83	50	48	51
Health worker	*	*	82	*
Other	*	*	*	56

*Percentages not calculated because there were fewer than 15 observations.

Note: u=unavailable.

women with some education, while in Haiti, women with the most education were most interested in NORPLANT. In Nigeria, there was very little variation in interest according to amount of schooling.

Except in Nepal, women who desired children in the next five years were much less likely than others to be interested in trying NORPLANT. Furthermore, except in Haiti, interest was higher among those who wanted no more children than among those who wanted to wait five years. Interest in trying NORPLANT was greater among women who had heard of the method prior to the interview than among those who had not. Among women who had already heard about NORPLANT, interest in trying the method was lower in Nigeria (55 percent) than in Bangladesh (81 percent), Haiti (71 percent) or Nepal (63 percent); however, a large proportion of Nigerian women had heard about the method only on the same day as the interview, leaving them less time to consider using it. (Only 45 percent of Nigerian women who had heard of NORPLANT on the day of the interview were interested in trying it, roughly the same proportion as among women who had never heard of NORPLANT.)

Interest in NORPLANT in Nepal was higher among women who had heard about the method from health workers and family planning motivators who visited them in the village (82 percent) than among those first informed by friends or relatives (58 percent) or by clinic personnel (48 percent). In Bangladesh, interest was highest among women who had first heard about NORPLANT at the family planning clinic, while in Haiti and Nigeria, interest was highest among those who had first heard about it from a friend or relative.

Women in Bangladesh and Nepal who were current method users but wanted to switch methods were more interested in trying NORPLANT than were nonusers, a relationship not seen in Nigeria or Haiti. In Bangladesh and Nepal, pill users were the most interested in trying NORPLANT, while in Nigeria women who used "other" methods (predominantly abstinence) showed the highest interest. In Haiti, there were too few observations to allow method-specific assessment of interest. Problems with pill compliance, observed in many countries,[6] may be the reason that pill users found NORPLANT an especially attractive alternative.

Table 3 shows that in Nepal, among women interested in trying NORPLANT, the method's reversibility and the woman's feeling that sterilization was not yet appropriate for her were the reasons mentioned most frequently as being important in their desire to try NORPLANT (by 85 percent and 81 percent of respondents, respectively). In Bangladesh and Haiti, on the other hand, the method's effectiveness (mentioned by 76 percent and 99 percent) and convenience (mentioned by 73 percent and 97 percent) were the most important reasons. In Nigeria, the fact that NORPLANT is a new and promising method and is highly effective were the reasons most frequently cited by women who wanted to try it (by 96 percent and 95 percent, respectively).

Table 4 shows that in all countries, the largest proportions of women who elected not to use NORPLANT cited a preference for other methods as a reason (51–83 percent). Fear of side effects was the next most frequently mentioned reason in Bangladesh, Nepal and Nigeria, (given by 69, 48 and 45 percent, respectively). Approximately one-third of the women in each country said that their husband would not approve and that this was an important factor in their decision, making this reason the second most frequently cited in Haiti and the third most often cited in Nepal. Fear of insertion and removal procedures was also frequently mentioned; concern about insertion was exceptionally high in Bangladesh. On the other hand, concerns that the capsules would be too visible and that people would know the woman was practicing contraception were not important reasons for lack of interest in trying NORPLANT.

Responses to an open-ended question revealed other important reasons behind some women's decisions not to try NORPLANT, such as concern about possible menstrual irregularities or about the newness of the method, a desire for more children in the next five years (and thus for a method of shorter duration), a perceived need for more information on the method, concern that they were too young or too old to use hormonal implants and not being currently married.

The overall proportion of women interested in trying NORPLANT who actually received it varied considerably across the four countries, from 52 percent in Haiti to 83 percent in Bangladesh (not shown). These differences were probably influenced by the number of women allowed to enter the clinical trials at each center, the volume of clients visiting the clinic and the proportion of respondents who were interested in trying NORPLANT.

There were also variations within countries in the proportion who accepted the method: Among interested women, for example, the proportion who received NORPLANT was positively associated with education. Better educated women may be more likely to see the need for and the benefits of follow-up visits and therefore be more inclined to make them. Consequently, clinic staff may be more likely to favor educated women in providing NORPLANT: In all four countries, interested women with no education were somewhat less likely to have received NORPLANT than were women with eight or more years of schooling.

Besides the inclusion and exclusion criteria for the clinical trials, other factors probably affected the likelihood that interested women would actually receive NORPLANT, such as selectivity on the part of the clinic staff responsible for recruiting acceptors (for example, the staff's tendency to pick women they considered likely to keep the implants in the longest). The social and demographic variations could also be due to differences in the availability of other temporary methods and of sterilization, factors that might limit or expand a woman's contraceptive options depending on her age or parity, for example.

Discussion

Contraceptive acceptability studies can contribute to increased method acceptance and continuation by identifying issues and concerns that can direct the development of informational and motivational material useful for dispelling rumors and misinformation about the method and for improving service delivery. Such studies may also help to identify the obstacles that prevent some women who find a method acceptable from actually using it.

Studies such as those described in this article should help programs identify social or cultural factors and concerns about the method that might impede or enhance both the acceptance of NORPLANT and that of other long-acting steroidal contraceptives. For example, a clinic client may be interested in using the method but afraid to undergo the necessary physical examination, especially if the doctor is male. Other women may first have to ask their husbands for permission to use NORPLANT (or may fear to do so). Financial obstacles or problems of accessibility to the clinic may also reduce acceptance of the method by some interested women. Other women may be interested in the method but at too early a stage in their reproductive life to consider such a long period for spacing births.

The acceptability surveys conducted in these four countries revealed a relatively high level of interest in using NORPLANT among potential acceptors. Many women mentioned that they liked various aspects of the method, such as its reversibility, effectiveness and convenience. Although the survey identified some potential obstacles to NORPLANT acceptance (such as concerns about menstrual irregularities and about husband's disapproval), interest in trying the method appears high. We have also identified a target group of potential acceptors most likely to want to try the method: women in their late 20s or older who have had a few children and who are interested either in spacing births for at least several years or in limiting births but who are not ready to use a permanent method.

The results of the surveys also point to the need for thorough counseling to reduce the apprehensions that both women and their husbands may have about this new method. Service providers must pay close attention to women's concerns regarding such issues as menstrual irregularities, insertion and removal procedures, side effects and return to fertility. In particular, the bleeding and other menstrual irregularities that some women experience while using NORPLANT could reduce the overall acceptability of the method in societies with strict customs and practices relating to menstruation. Additionally, in countries where the status of women is low and their rights limited, the husband's knowledge and approval of a method are likely to be important determinants of acceptability. Thus, because husbands can be an obstacle to women's acceptance of NORPLANT, service providers should increase their efforts to involve husbands in counseling services and information dissemination.

In the analysis reported here, we did not attempt to differentiate interest in NORPLANT from interest in other long-acting reversible methods. Thus, we do not know whether the responses would have been the same if the method described had been a new six-month injectable or a new IUD. Preference for other methods was a major reason potential acceptors gave for not wanting to try NORPLANT. Perhaps the next step is to investigate preferences for NORPLANT versus preferences for other new long-acting methods, in terms of both initial acceptance and continuation. Another approach could be to look at the acceptability of NORPLANT relative to that of IUDs for women who wish to space births for a year or more. Since both implants and IUDs must be inserted and removed by a trained medical person, an evaluation of the relative popularity and acceptability of each might be worthwhile. Furthermore, in countries where NORPLANT has been available for some time, it might be useful to conduct population-based acceptability surveys to assess general attitudes toward, perceptions of and interest in the method. One such study has been conducted, in Sri Lanka.[7] Continuing efforts should be made to monitor the interest in, acceptance of, satisfaction with and continuation of NORPLANT use as this method becomes an increasingly important contraceptive option.

Table 3. Percentage of respondents interested in trying NORPLANT who reported that various preselected reasons were important in their decision, by country

Reason	Bangladesh (N= 444)	Haiti (N= 275)	Nepal (N= 388)	Nigeria (N= 281)
Effectiveness	76	99	75	95
Newness and promise	61	97	67	96
Safety	61	87	60	92
Convenience	73	97	72	94
Reversibility	66	70	85	84
Unreadiness for sterilization	41	69	81	50

Table 4. Percentage of respondents not interested in trying NORPLANT* who reported that various preselected reasons were important in their decision, by country

Reason	Bangladesh (N= 377)	Haiti (N= 136)	Nepal (N= 426)	Nigeria (N= 259)
Prefers other method	73	83	51	71
Fears side effects	69	36	48	45
Fears insertion	50	38	33	31
Fears removal	20	38	32	31
Believes method is not good for her	43	24	34	38
Fears husband's disapproval	34	41	37	29
Does not want capsules in body	19	26	36	30
Believes method may show in arm	4	8	22	17
Fears people may know she is using a method	1	7	15	12

*Includes those who were undecided.

References

1. S. J. Segal, "The Development of NORPLANT Implants," *Studies in Family Planning,* **14**:159, 1983.

2. J. Marshall, "Acceptability of Fertility-Regulating Methods: Designing Technology to Fit People," *Preventive Medicine,* **6**:65, 1977.

3. A. Keller, "Contraceptive Acceptability Research: Utility and Limitations," *Studies in Family Planning,* **10**:230, 1979.

4. S. Diaz et al., "A Three-Year Clinical Trial with Levonorgestrel Silastic Implants," *Contraception,* **19**:557, 1979; S. Satayapan, K. Kanchanasinith and S. Varakamin, "Perceptions and Acceptability of NORPLANT Implants in Thailand," *Studies in Family Planning,* **14**:170, 1983; F. Lubis et al., "One-Year Experience with NORPLANT Implants in Indonesia," *Studies in Family Planning,* **14**:181, 1983; I. Sivin et al., "A Four-Year Clinical Study of NORPLANT Implants," *Studies in Family Planning,* **14**:184, 1983; A. K. M. S. Ahmed, "Preliminary Consultant Report on NORPLANT Clinical Trial Conducted in Three Centers of Bangladesh," paper presented at the Co-Investigators and Social Workers Meeting, Bangladesh Fertility Research Programme, Dhaka, June 28, 1986; F. C. Greenslade, J. Spicehandler and J. Bruce, "Determinants of User Satisfaction with the NORPLANT Contraceptive Method and Its Service Delivery System: A Proposal to the International Development Research Centre," The Population Council, New York, 1986; and S. Basnayake, S. Thapa and S. Balogh, "The New Contraceptive NORPLANT Implants: One-Year Evaluation of Their Safety, Efficacy and Acceptability in Sri Lanka," paper presented at the annual meeting of the American Public Health Association, New Orleans, Oct. 18–22, 1987.

5. S. N. Mitra, *Bangladesh Contraceptive Survey 1985,* Mitra and Associates, Dacca, 1987.

6. L. Potter et al., "Oral Contraceptive Compliance in Rural Colombia: Knowledge of Users and Providers," *International Family Planning Perspectives,* **14**:27, 1988.

7. S. Thapa et al., "Assessing Potential Demand for NORPLANT in the General Population: Test of an Approach in Sri Lanka," paper presented at the annual meeting of the National Council for International Health, Washington, D.C., June 14–17, 1987.

Resumen

Un estudio de 2.586 posibles aceptantes de implantes contraceptivos hormonales NORPLANT® que fueron entrevistadas en 10 clínicas de planificación familiar en Bangladesh, Haití, Nepal y Nigeria revela un alto nivel de interés: De 48 a 67 por ciento de las entrevistadas que habían acudido a las clínicas para empezar el uso anticonceptivo o para obtener información acerca de NORPLANT, y que se consideraban como posibles aceptantes de implantes, expresaron interés en el método. Una gran proporción de las mujeres identificó la eficacia, la reversibilidad y la conveniencia de los implantes como sus aspectos más atrayentes. Las mujeres mayores de 25 años que ya tuvieron varios hijos y que querían limitar o espaciar los partos por lo menos unos años, pero que no estaban dispuestas todavía a esterilizarse, eran las más interesadas en NORPLANT. Los resultados también demuestran la necesidad de tener un programa de asesoramiento cabal a fin de reducir las aprensiones que las mujeres y sus maridos puedan sentir con respecto al método, como por ejemplo, miedo de los efectos secundarios o del procedimiento de inserción y extracción.

Résumé

L'analyse de 2.586 femmes potentiellement prêtes à accepter l'implant contraceptif hormonal NORPLANT®, selon les résultats d'entrevues organisées dans 10 cliniques de planification familial au Bangladesh, à Haïti, au Népal et au Nigéria, révèle un degré d'intérêt élevé pour la méthode NORPLANT: entre 48 et 67 pour cent des femmes interrogées qui s'étaient adressées aux cliniques pour entamer une méthode contraceptive ou s'informer sur la méthode NORPLANT et qui étaient considérées comme potentiellement prêtes à accepter l'implant ont exprimé leur intérêt pour la méthode. Une grande partie d'entre elles ont souligné parmi les caractéristiques les plus attrayantes de l'implant son efficacité, son caractère réversible et sa commodité. Les femmes aux alentours de la trentaine ou plus, déjà mères de plusieurs enfants et souhaitant soit espacer les naissances de quelques années au moins soit tout simplement les limiter, mais n'étant pas encore prêtes à se faire stériliser, se sont avérées les plus susceptibles d'intérêt pour la méthode NORPLANT. Les résultats de l'analyse soulignent également le besoin d'une consultation approfondie afin de dissiper les appréhensions ressenties par la femme et son conjoint au sujet de la méthode, notamment la crainte d'effets secondaires ou de la procédure d'insertion ou de retrait de l'implant.

Characteristics of Chinese Children

(Continued from page 48)

hijos únicos residentes en zonas urbanas demostraron un desempeño escolar marcadamente superior a la de sus pares no hijos únicos; no se verificó ninguna diferencia en esta medida entre los niños residentes en zonas rurales. A pesar de que los maestros de los niños tendían a evaluar a los hijos únicos como más virtuosos y competentes que los niños con hermanos, la evaluación de los niños por sus propios padres, usando las mismas medidas, no revelaron mayores diferencias entre los dos grupos.

Résumé

Une étude des effets de la politique démographique chinoise sur les résultats scolaires et la personnalité de l'enfant unique a été entreprise en 1987 parmi les écoliers de Changchun, dans la province de Jilin. Les résultats ne sont pas venus confirmer les rapports publiés dans la presse chinoise et occidentale selon lesquels la politique chinoise de l'enfant unique était en train de créer une génération d'enfants gâtés. Dans l'ensemble, les résultats scolaires de l'enfant unique se sont révélés sensiblement supérieurs à ceux de ses camarades non uniques, mais l'on n'a relevé aucune différence majeure au niveau de la personnalité. Dans les sous-catégories de résidence en milieu urbain ou rural et par année d'études, on a observé des résultats scolaires sensiblement supérieurs chez les enfants uniques vivant en milieu urbain par rapport à leurs camarades non uniques; aucune différence de la sorte n'est apparue parmi les enfants originaires de milieux ruraux. Malgré une tendance chez les enseignants à qualifier l'enfant unique de plus apte et compétent que l'enfant non unique, l'évaluation par les parents de leurs propres enfants, sur la base des mêmes échelles, n'indique aucune différence majeure entre les deux groupes.

Postpartum Sterilization by Nurse-Midwives in Thailand

"Using nurse-midwives to provide postpartum sterilization services not only frees physicians' time for more demanding procedures but benefits the patients in terms of the added information and attention they receive."

By Kanchana Kanchanasinith, Pattaka Piyapinyo, Pichit Pitaktepsombati, Suvathana Vibulsresth, D. S. Gates, Barbara Janowitz and Mark Robbins

Summary

To increase the availability of sterilization outside urban areas, the National Family Planning Program of Thailand decided to expand a pilot program to train nurse-midwives with operating room experience to perform postpartum sterilization. A comparison of 541 procedures done by nurse-midwives and 279 performed by physicians show that the two provider groups do not differ significantly with respect to the rate of surgical difficulties (2.2 percent among physicians and 3.1 percent among nurse-midwives) or the rate of complications one year after the operation (3.9 percent among physicians and 4.4 percent among nurse-midwives). However, there were significant differences regarding counseling about the operation ($p<0.05$), with nurse-midwives providing more complete information about the surgery than the physicians. The results of this study support the training of nurse-midwives to perform postpartum sterilization.

Introduction

Estimates from the 1987 Thai Demographic and Health Survey indicate that the proportion of women sterilized reached 22 percent in that year,[1] having previously increased from six percent in 1969–1970 to 19 percent in 1981.[2] Slightly over four-fifths of the sterilizations performed in Thailand are done postpartum.[3] Among all women who are sterilized, more than 80 percent obtain the procedure at government hospitals. Not all hospitals, however, are able to offer sterilization services, because of insufficient staff or facilities. Since most of the country's hospitals are located in urban areas, rural women must travel much further than their urban counterparts to receive services. Consequently, there are wide rural-urban differentials in sterilization rates: Among women with two or more living children, 45 percent of those living in urban areas have been sterilized, compared with 30 percent of those in rural areas. Among women who delivered at home, the sterilization rate is especially low (16 percent).[4]

To increase the availability of sterilization services at the provincial level in Thailand, particularly at community and district hospitals where physicians are not always available, a pilot project was undertaken in 1979 to train nurse-midwives to perform postpartum sterilization. It was anticipated that the participation of nurse-midwives would allow hospitals to better meet the demand for sterilization and would free physicians to perform other tasks. Twenty trained nurse-midwives performed 3,549 postpartum sterilizations during a 12-month period.[5] Although the nurse-midwives took longer than physicians to perform the surgery, the rates of operative difficulty and postoperative morbidity did not differ between the two groups. Thus, the pilot project showed that nurse-midwives could successfully perform sterilizations with minimal difficulties and complications. Because of the success of this pilot project, in October 1983 the Thai cabinet approved the use of trained nurse-midwives to carry out postpartum sterilizations under medical supervision.[6]

In 1985, the National Family Planning Program (NFPP) decided to expand the training program throughout the country and initiate a study to further evaluate the provision of sterilization services by nurse-midwives. The collaborating agencies in the study were the Thailand Fertility Research Association, the Institute of Population Studies at Chulalongkorn University in Bangkok and the United States–based Family Health International in North Carolina. The study was designed to compare the performance of physicians and trained nurse-midwives by contrasting surgical events and their immediate and long-term complications. It also attempted to evaluate the patients' impressions of all aspects of the service and their satisfaction with the operation one year later.

During March and April of 1985, the NFPP recruited and trained 33 nurse-midwives who had at least two years of operating room experience and had previously assisted physicians in postpartum sterilizations. (Thirteen had already performed the operation under a physician's supervision.) The training occurred in three provincial hospitals and four regional Maternal and Child Health Centers; a gynecologist at each location provided the training to groups of five nurse-midwives. The 12-week course included two weeks of classes and 10 weeks of clinical practice. All of the nurse-midwives were trained to occlude the Fallopian tubes by the modified Pomeroy method.* The nurse-midwives spent the first two weeks of clinical training observing procedures and acting as assistants during the operation. Then each performed 20 sterilizations, with the gynecologist-trainer assisting. During the last four

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*The tubes are brought out of the abdomen through a small incision, tied and cut.

weeks of clinical training, the nurse-midwives returned to their respective hospitals and carried out sterilizations under the observation and close supervision of gynecologists at their hospitals.

The Study

The study sample was drawn from seven provincial and eight community hospitals, selected because they had large obstetric caseloads and because nurse-midwives had either been assisting in sterilization procedures or performing them under a physician's supervision. These hospitals are located in four of the country's geographic regions (Northeast, Central, East and North). One physician and one nurse-midwife from each of the 15 hospitals were selected to participate in the study sample. The study design initially called for enrolling a total of 900 women (60 women from each of the 15 participating hospitals) over four months; all postpartum patients who had either requested or been motivated to request sterilization during the period were recruited for the study. Three hundred were to be assigned to the physicians and 600 to the nurse-midwives. However, it was not always possible to maintain a rigid proportionment between the two groups because of competing demands on the physicians' time. By the end of a four-month recruitment period that began in November 1985, 820 women were enrolled in the study, with 541 operated on by the nurse-midwives and 279 by the physicians.

For each sterilization they performed, the providers completed a report summarizing the surgery and any immediate complications. The patients were asked to return to the hospital for follow-up; most did so two weeks after the surgery, although three women returned between two weeks and three months. At the follow-up visit, data on short-term complications were collected. After one year, postcards were sent out reminding patients of a second follow-up visit; at that visit, the women were examined and asked to provide general clinical data (including information on complications, general complaints, medication and pregnancy status). Some of the women who failed to return for the one-year follow-up were visited at home by the nurse midwives. Ninety-one percent of the women in the physician group and 94 percent of those in the nurse-midwife group returned for the first follow-up; the proportions who completed the second were 84 percent and 83 percent, respectively.

The patients completed two satisfaction questionnaires, one before discharge from the hospital and one at the second follow-up visit. The first questionnaire, administered by either a nurse or a social worker, contained items on previous contraceptive practice, factors influencing the decision to choose sterilization and the patient's understanding of and satisfaction with the operation. The second questionnaire obtained information on physical complaints, the counseling that patients had received, their assessment of the services provided and their satisfaction with the operation one year after surgery. Clinical data were sent to the Thailand Fertility Research Association for processing and analysis; the responses from the two satisfaction questionnaires were processed by the Institute of Population Studies at Chulalongkorn University. Chi-square tests were used to compare the two groups by clinical and sociodemographic variables. The Fisher's exact test was used when the sample sizes were small.

Table 1. Percentage distribution of women undergoing sterilization, by social and demographic characteristics, according to sterilization provider, Thailand, 1985

Characteristic	Total (N=820)	Physician (N=279)	Nurse (N=541)
Region			
Northeast	53.8	51.6	54.9
Central	19.6	19.7	19.6
East	14.5	15.4	14.0
North	12.1	13.3	11.5
Age			
<20	1.1	0.7	1.3
20–24	28.9	23.7	31.6
25–29	34.0	37.3	32.3
30–34	21.8	22.6	21.4
≥35	14.1	15.8	13.3
Live births			
1–2	33.0	34.8	32.2
3–4	52.3	50.5	53.2
≥5	14.6	14.7	14.6
Education			
≤3 years	11.3	9.7	12.1
4 years	76.4	77.3	75.9
≥5 years	12.3	13.0	12.0
Total	100.0	100.0	100.0

Results

The distribution of the women's social and demographic characteristics did not differ significantly between the two provider groups ($p<0.05$). As Table 1 shows, the women in both groups were young: Thirty percent were younger than 25 and 34 percent were between 25 and 29 years old. About half of the women had had 3–4 live births and one-third had had 1–2 children. Approximately 75 percent of the women had had four years of education.

The frequency of surgical events associated with the sterilization, defined as either surgical difficulties or injuries, also did not differ significantly between the two provider groups. Surgical difficulties occurred in 2.2 percent of the procedures done by the physicians and in 3.1 percent of those done by the nurse-midwives. In both groups, most of the difficulties were in visualizing and grasping the tubes. There were no surgical injuries in 99 percent of all the procedures performed. Only one woman in each group had a tubal injury. (The woman in the physician group needed a suture to stop bleeding while the one in the nurse-midwife group did not need treatment.) No other complications occurred during surgery in either group. While 84–85 percent overall had no physical problems immediately following the procedure, 87 percent of the physician group and 84 percent of the nurse-midwife group said they had none one month later.

There were no statistically significant differences between the two groups in the number and type of complications that occurred during the surgery and immediately afterwards; there were also no differences in patient complaints reported at the two follow-up visits. According to reports of each surgical intervention, 0.8 percent of women in both groups experienced complications (incision bleeding and healing problems in the physician group and incision infection in the nurse-midwife group). At the one-year follow-up, complications were reported by 3.9 percent of the women in the physician group and 4.4 percent of the patients in the nurse-midwife group. Most of these were complaints of pain in the ovaries, tubes or uterus (adnexal pain). Other less frequent complications included pain at the incision site, hardening beneath the skin and vaginal bleeding. Complications led to hospital readmission of 0.8 percent of the women in the physician group and 0.4 percent of the women in the nurse-midwife group. No pregnancies were reported among either group.

While nine percent of the women reported that they were unable to do household chores for 0–4 days following the surgery, 54 percent said they could not do housework for 5–15 days after surgery, 27–28 percent did none for 16–30 days and nine percent did no housework for more than 30 days. These results reflect a general belief in Thailand that women should not exert themselves for a period after giving birth for fear of bad health later on. Because the women in this study not only

Table 2. Percentage distribution of women undergoing sterilization, by type of personnel who explained the operation, according to sterilization provider

Type of personnel	Total (N=820)	Physician (N=279)	Nurse (N=541)
Provider	49.4	23.6	62.7
Another nurse	15.9	25.8	10.9
Another physician	3.9	8.6	1.5
A family planning worker	3.0	3.6	2.8
Another staff person	1.9	2.2	1.8
Don't know/no explanation given/no answer	25.7	36.2	20.3
Total	100.0	100.0	100.0

were postpartum but also had undergone a sterilization procedure, they may have been extra cautious about performing any chores soon afterwards. Furthermore, Thais often hire a domestic helper to do various chores and many of the women in the study probably did so after their delivery and operation.

The two groups differed significantly with respect to whether or not the person performing the surgery explained the operation to the patient. Table 2 specifies the clinician who provided counseling and the type of information it included. Twenty-four percent of women in the physician group said that the person performing the surgery had explained the procedure to them, while the corresponding proportion in the nurse-midwife group was 63 percent. A nurse explained the procedure to 26 percent of the physicians' patients, and a nurse other than the one performing the operation explained it to 11 percent of the patients in the other group. More than one-third of those in the physician group and one-fifth of those in the nurse-midwife group did not know who had explained the operation to them, had received no explanation or gave no response.

To assess the counseling, the researchers asked the women a series of questions about the information they had received before the operation. As Table 3 indicates, women in the nurse-midwife group were significantly better informed about the operation, its consequences and follow-up care than women in the physician group ($p<0.05$). The difference in the information provided is reflected in the women's understanding of their surgery: Of the nurse-midwife patients, 48 percent were able to correctly identify the surgical procedure as one in which the tubes are cut and tied, while only 35 percent in the physician group were able to do so (not shown).

Almost all of the women in both groups expressed satisfaction with the operation, with only 0.6 percent of those in the nurse-midwife group saying they were dissatisfied. Furthermore, 97 percent of the women said they would recommend sterilization to others. The reasons why 3.5 percent of the women in the physician group and 2.9 percent of those in the nurse-midwife group would not recommend the operation to others were unrelated to the provider, but rather reflected a reluctance to offer advice on a personal matter. Asked if they would still choose to have the sterilization if they were to make the decision again, 96 percent of the women in the physician group and 98 percent of those in the nurse-midwife group said they would.*

Discussion

This comparative study confirms that nurse-midwives with operating room experience can be trained to perform postpartum sterilization with as few surgical difficulties and injuries as physicians. The rate of surgical difficulties among the nurse-midwives in the present study was similar to that found in the 1979 pilot project (five percent of 143 procedures)[7] and in a later field trial involving 20 nurse-midwives in northeastern Thailand (three percent of 3,549 operations).[8]

Our study also shows no difference in complication rates at the first follow-up between patients of nurse-midwives and patients of physicians. The rates of complications following surgery were lower in the present study (0.8 percent for both provider groups) than in either the earlier pilot project (seven percent for nurse-midwives and six percent for physicians) or the subsequent field trial (11 percent for nurse-midwives). These higher rates may be partially explained by the different timing of the data collection (prior to hospital discharge in the field trial vs. 15–90 days postsurgery in the present study). Furthermore, complications unrelated to the surgery (e.g., respiratory infections and cystitis) were included in the earlier studies' rates but not in the data presented here. The important clinical implications for the present study, however, lie in that there were no significant differences in the complication rates between the two provider groups.

The results of our study compare favorably with those of an earlier Bangladesh study. That study compared the performance of nursing professionals trained to perform tubectomies with that of qualified physicians.[9] The infection rates were 5.5 percent among the 366 tubectomies done by the nursing professionals and 6.4 percent among the 234 done by physicians. The patients also turned in self-evaluations of their physical problems: Over 84 percent in both groups said they had no physical problems either immediately after the sterilization procedure or one month later.

Table 3. Percentage (and number*) of sterilization patients, by the type of information about the procedure received, according to sterilization provider

Information†	Total	Physician	Nurse
How it is performed	44.1 (790)	34.9 (275)	48.9 (515)
How long it takes	46.5 (790)	38.6 (272)	50.6 (518)
How effective it is	46.3 (774)	37.1 (267)	51.1 (507)
Possible complications	44.2 (767)	36.1 (263)	48.4 (504)
Necessary post-surgery care	77.4 (779)	68.8 (263)	81.8 (516)
Possible effects on menstruation	41.3 (786)	31.2 (269)	46.6 (517)
Indications for further medical treatment	62.5 (786)	53.2 (267)	67.2 (519)

*Ns differ because of the nonresponders.

†The nurse and physician groups differ significantly with respect to each of these variables ($p<0.05$).

Our study followed the sterilization patients for one year after the operation and achieved an 83 percent follow-up rate at one year. No previous study of the suitability of training nurse-midwives has followed patients for longer than six weeks. We found that at one year after the operation, there were a few minor complications among both groups, none of which needed medical intervention. The frequency of these complications, roughly four percent, did not differ significantly between the two provider groups.

In Thailand, the family planning unit in each hospital generally provides counseling for women who seek contraceptive services. The unit's nurse or social worker informs clients about the methods that are available through the unit and the woman then chooses which contraceptive method she would prefer. Hospital staff schedule the procedure for those women who elect to be sterilized. Thus, these women will have already received some information about sterilization before they are referred for surgery. However, it is up to the individual provider to explain the actual surgery and tell patients what to expect afterwards and what postoperative care is required. Our study found that women sterilized by nurse-midwives had more accurate information on the procedure than those operated on by physicians: About half of the nurse-midwives' patients compared with one-third of the physicians' patients said they were told how the operation would be performed, and the same proportions were able to give a basic description of the surgery. One reason for this differential may be that the nursing professionals can spend more time with patients than can physicians, who are in demand for procedures requiring a higher degree of medical expertise. Even though few women in either provider group received complete information, the vast majority were satisfied with their operation. The reasons why very small proportions of women either would not recommend sterilization to others or would not decide to have the operation again if given the chance are not related to whether the procedure was performed by a doctor or a nurse.

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*Patients gave the following reasons for saying they would not make the same decision again, for their dissatisfaction with the operation and for not recommending it to others: needed more children, should have used temporary methods in case more children are needed, had had pain during the operation, had had health problems afterwards, had been too old to undergo a procedure, were afraid of being blamed for interfering in others' affairs, were afraid that other people would not believe them, felt they should let others make their own decisions, and were afraid that other people would experience discomfort.

Not only were the nurse-midwives as proficient as the physicians in performing sterilizations, they also provided more complete information to their patients about the surgery and, more importantly, about postoperative care. Using nurse-midwives to provide postpartum sterilization services not only frees physicians' time for more demanding procedures but benefits the patients in terms of the added information and attention they receive. With funds for family planning in short supply, governments and health programs will need to find innovative ways to make the most of these limited resources. Thailand has been in the forefront in the training of nurses to perform postpartum sterilizations. This cost-effective strategy to maximize medical personnel is rarely considered by administrators of family planning programs, who may fear that nurses would encounter too many difficulties in performing surgery compared with physicians.

As we noted earlier, the prevalence of female sterilization among Thai women is high, although it is far less common among women who live in remote rural areas and tend to deliver at home. In general, female sterilization services are available in district and provincial hospitals only and the procedures have been performed almost entirely by physicians. One advantage in training those nurses who are more available to rural residents is that it improves sterilization accessibility for a group that has long been underserved. It also allows physicians to perform other medical tasks and ultimately increases the number of sterilization providers. The findings of this study support the decision of Thailand's Ministry of Public Health to train more nurse-midwives to perform postpartum sterilizations and should encourage others to consider these nursing professionals as potential providers of sterilization services as well.

References

1. N. Chayovan, P. Kamnuansilpa and J. Knodel, *Thailand Demographic and Health Survery, 1987*, Institute for Population Studies, Bangkok, and Institute for Resource Development/Westinghouse, Columbia, Md., May 1988.

2. P. Kamnuansilpa, *Selected Findings from Thailand's Third Contraceptive Prevalence Survey*, Research Center National Institute of Development Administration, Institute for Population and Social Research, Mahidol University, National Family Planning Program, Ministry of Public Health, Bangkok, 1985.

3. P. Pitaktepsombati and B. Janowitz, "Contraceptive Sterilization in Thailand," *Health and Population Studies Based on the 1987 Thailand Demogrpahic and Health Survey*, Demographic and Health Surveys Further Analysis Series, No. 1, Institute of Population Studies, Chulalongkorn University, Bangkok, Dec. 1989.

4. Ibid.

5. S. Satyapan et al., "Postpartum Tubal Ligation by Nurse-Midwives in Thailand: A Field Trial," *Studies in Family Planning*, **14**:115, 1983.

6. N. Dusitsin and S. Satyapan, "Sterilization of Women by Nurse-Midwives in Thailand," *World Health Forum*, **5**:259, 1984.

7. Ibid.

8. S. Satyapan et al., 1983, op. cit. (see reference 5).

9. S. Chowdhury and Z. Chowdhury, "Tubectomy by Paraprofessional Surgeons in Rural Bangladesh," *The Lancet*, **II**:567, 1975.

Resumen

A fin de aumentar la disponibilidad de servicios de esterilización fuera de las zonas urbanas, el Programa Nacional de Planificación Familiar de Tailandia resolvió ampliar un programa piloto para la capacitación de parteras-enfermeras con experiencia de quirófano para realizar la esterilización postparto. Una comparación de 541 procedimientos realizados por parteras-enfermeras y 279 practicados por médicos revela que no hay grandes diferencias entre ambos grupos en cuanto a la frecuencia de problemas durante la intervención quirúrgica (2,2 por ciento entre los facultativos contra 3,1 por ciento en el caso de las parteras-enfermeras) ni de complicaciones durante el año posterior (3,9 por ciento frente a 4,4, respectivamente). Se observaron, no obstante, diferencias significativas en cuanto al asesoramiento acerca de la operación (p<0,05), pues las parteras-enfermeras brindaban una información más completa que los médicos. Los resultados del estudio aconsejan la capacitación de parteras-enfermeras para realizar la esterilización postparto.

Résumé

Désireux de rendre la stérilisation plus facilement accessible en zones rurales, le Programme national de planification familiale de la Thaïlande a décidé d'étendre un programme pilote de manière à enseigner à des infirmières/sages-femmes ayant déjà travaillé en salle d'opération, à pratiquer la stérilisation post-partum. Une étude comparée de 541 interventions effectuées par des infirmières/sages-femmes et 279 effectuées par des médecins n'a révélé aucune différence significative entre les deux groupes de professionnels en ce qui concerne le taux de difficultés chirurgicales (2,2 pour cent parmi les médecins et 3,1 pour cent parmi les infirmières/sages-femmes) ou le taux de complications un an après l'intervention (3,9 pour cent parmi les médecins et 4,4 pour cent parmi les infirmières/sages-femmes). Il existait, cependant, des différences significatives quant aux conseils donnés au sujet de l'intervention (p<0,05), les infirmières/sages-femmes fournissant des informations plus complètes au sujet de l'intervention que ne le font les médecins. Les résultats de cette étude soutiennent la formation des infirmières/sages-femmes pour pratiquer la stérilisation post-partum.

Induced Abortion: A World Review, 1990

"The absence of restrictions does not guarantee that [abortion] services will be available. In India and Bangladesh, the overall shortage of medical facilities makes legal abortion and menstrual regulation unavailable to most women."

By Stanley K. Henshaw

Summary

The worldwide trend toward liberalization of abortion laws has continued in the last four years with changes in 10 countries. Laws have also become more restrictive in four countries but in ways that will affect few women. Forty percent of the world's population now lives in countries where no specific justification is required to obtain an abortion, and 25 percent lives where an abortion is allowed only if the woman's life is in danger.

Legal abortion rates range from a high of at least 112 abortions per 1,000 women of reproductive age in the Soviet Union to a low of five per 1,000 in the Netherlands. In recent years, abortion rates have been increasing in Czechoslovakia, England and Wales, New Zealand and Sweden and declining in China, France, Iceland, Italy, Japan, the Netherlands and South Korea.

Mortality from legal abortion averages 0.6 deaths per 100,000 procedures in developed countries with data. Abortion services are increasingly being provided outside of hospitals, and for those performed in hospitals, overnight stays are becoming less common. Suction curettage and dilatation and evacuation, the safest methods, are increasingly being used in developed countries but are unavailable in some developed as well as developing areas, especially where abortion is legally restricted.

Introduction

Induced abortion—both legal and illegal—has important public health and demographic implications that are often overlooked. For epidemiologists and health planners concerned with maternal health, information on abortion is important in designing and implementing programs to reduce the adverse effects of unsafe abortions. Demographers are interested in the effects of induced abortion on fertility and population growth, while family planning program specialists use abortion rates as one way of gauging the need for contraceptive services and measuring program impacts.

This article summarizes the latest information on abortion laws and policies, as well as the incidence and health implications of abortion. It updates the data in an earlier publication by The Alan Guttmacher Institute, *Induced Abortion: A World Review, 1986,* that contained a summary of the legal status of abortion in all countries; statistics on the number and characteristics of women who obtain abortions in countries where such data are available; information about abortion procedures, related morbidity and mortality and the effects of policy changes; and a section on the statistical methods used.*

Laws and Policies

Around the world, laws governing induced abortion range from those prohibiting abortion with no explicit exceptions to those establishing it as a right of pregnant women. Table 1 (page 60) classifies all countries and dependent territories† with populations of one million or more according to the criteria under which women may legally obtain an abortion. Some 52 countries of this size, containing 25 percent of the world's population, fall into the most restrictive category, where abortions are prohibited except when the woman's life would be endangered if the pregnancy were carried to term. In some of the countries in this category, statutes prohibit abortion without explicit exception—even if the life of the pregnant woman is in danger. But in most if not all cases, implicit provisions in the statutes or general principles of criminal law permit abortion to save the life of a pregnant woman.

Forty-two countries of at least one million people, comprising 12 percent of the world's population, have statutes authorizing abortion on broader medical grounds—to avert a threat to the woman's general health (not limited to the risk of losing her life) and sometimes for genetic or juridical indications, such as rape or incest—but not for social indications alone or on request. Some of the statutes permit abortion only when the woman's physical health is threatened, while others explicitly or by interpretation include her mental health as well.

Twenty-three percent of the world's population live in the 13 countries of one million or more people that allow abortions for social or social-medical indications; that is, adverse social conditions can either justify termination of a pregnancy or be considered in evaluating a threat to the woman's health. In many of these countries, including Australia, Finland, Great Britain, Japan and Taiwan, abortion is available for virtually any reason that the woman and her physician judge important.

The least restrictive category includes the 25 countries where abortion is permitted up to a certain point in gestation without requiring that specific indications be present. Some of the world's most populous countries—China, the Soviet Union and the United States, as well as about half of the European countries—are in this category, which contains about 40 percent of the world's population. In some of these

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*A complete set of updated tables with statistics for each country for all available years may be obtained from the author.

†In subsequent references, "countries" is used to refer to all areas for which data are presented.

Table 1. Countries, by criteria for abortion, according to region, June 1, 1990

Law	Africa	Asia & Oceania	Europe	North America	South America
To save a woman's life	Angola Benin Botswana Burkina Faso Central Afr. Rep. Chad Côte d'Ivoire Gabon Libya Madagascar Malawi Mali Mauritania Mauritius Mozambique Niger Nigeria Senegal Somalia Sudan Zaire	Afghanistan Bangladesh Burma Indonesia Iran Iraq Laos Lebanon Oman Pakistan Philippines Sri Lanka Syria United Arab Emirates Yemen Arab Rep. Yemen, Peoples' Democratic Rep.	Ireland	Dominican Rep. El Salvador*,† Guatemala Haiti Honduras Mexico* Nicaragua Panama	Brazil* Chile Colombia Ecuador* Paraguay Venezuela
Other maternal health reasons	Algeria Cameroon* Congo Egypt† Ethiopia Ghana*,† Guinea Kenya Lesotho Liberia*,† Morocco Namibia*,† Rwanda Sierra Leone South Africa*,† Tanzania Uganda Zimbabwe*,†	Hong Kong*,† Israel*,† Jordan* Korea, Rep. of *,† Kuwait† Malaysia*,† Mongolia Nepal New Zealand*,† Papua New Guinea Saudi Arabia Thailand*	Albania Northern Ireland Portugal*,† Spain*,† Switzerland	Costa Rica Jamaica Trinidad & Tobago	Argentina* Bolivia* Guyana Peru
Social and social-medical reasons	Burundi Zambia†	Australia† India*,†,†† Japan*,†,‡‡ Korea, Dem. Rep.*,† Taiwan*,†	Finland*,†,‡,§ German Fed. Rep.*,†,§,§§ Great Britain†,*† Hungary*,†,‡,§ Poland*,§,‡‡		Uruguay*,**
No specific reason required	Togo Tunisia§	China Singapore*† Turkey*§ Vietnam	Austria§,§§ Belgium*‡ Bulgaria§ Czechoslovakia§ Denmark§ France§ German Dem. Rep.§ Greece§ Italy§ Netherlands Norway§ Romania§ Soviet Union§ Sweden†* Yugoslavia*§	Canada Cuba*§ Puerto Rico United States	

*Includes juridical grounds, such as rape and incest. †Includes abortion for congenital defects.

‡Approval is automatic for women who meet certain age, marital and/or parity requirements.

§During the first three months or 12 weeks.

**Not permitted for health reasons but may be permitted for serious economic difficulty.

††During the first 20 weeks.

‡‡No formal authorization is required, and abortion is permitted in doctor's office; thus, abortion is de facto available on request.

§§Gestational limit is for interval since implantation. *†During the first 24 weeks.

*‡During the first 14 weeks for women "in distress." *§During the first 10 weeks.

†*During the first 18 weeks.

Notes: Table does not include countries with fewer than one million inhabitants or those for which information on the legal status of abortion could not be located (e.g., Bhutan and Kampuchea). Unless otherwise indicated in footnotes, gestation limits are at fetal viability or are unknown or undefined.

countries—for example, Sweden and Yugoslavia—abortion is defined explicitly as a right of a pregnant woman up to a certain point in gestation.

Even where abortion is available legally, abortion services are generally subject to the restrictions that apply to other types of medical or surgical care. For example, in most if not all countries, abortion services may be provided only by licensed medical personnel and only with the consent of the woman. Most if not all countries with liberalized abortion laws do have gestation limits (as shown in Table 1) beyond which health or other indications are required for the procedure to be permitted. Twelve weeks from the last menstrual period is the most common limit, but limits of from 10 to 24 weeks also exist, as well as laws that simply specify the point of fetal viability as the limit.

A variety of other restrictions exist throughout the world, the most common being parental notification or consent for minors, waiting periods, compulsory counseling and the prohibition of abortions in profit-making facilities. According to a recent analysis, spousal authorization requirements exist in several developing countries, including Kuwait, Taiwan and Turkey;[1] however, in countries without statutory provision for spousal consent, there have been no known cases in which "a husband's claim of veto [has] been judicially upheld."[2]

It should be emphasized that the formal classification of the laws does not necessarily reflect their restrictiveness in actual practice. For example, among countries whose laws permit abortions only for maternal health reasons, practices in Africa and Latin America allow very few legal procedures, while those in Israel, New Zealand and South Korea allow rates of abortion comparable to those in countries without restrictions on the reasons women may obtain abortions. Legal interpretations of the same law can even vary widely within a country, as in Switzerland, where the exception for medical reasons is interpreted very liberally in some cantons and very narrowly in others.

Restrictive laws do not necessarily mean that safe abortion services are unavailable. Services may exist despite legal constraints because laws are either interpreted with flexibility or not vigorously enforced or because physicians are willing to risk prosecution. Abortion is restricted in several countries that permit menstrual regulation (a procedure identical to an early abortion but performed without a pregnancy test). The government of Bangladesh, for example, supports clinics that provide menstrual regulations up to 10 or 12 weeks' gestation as a public health measure. Menstrual regulations are also performed in some areas of Indonesia.[3]

Similarly, in Latin America, although abortion providers are sometimes prosecuted, virtually all major cities have physicians who perform abortions and some have clinics that specialize in the procedure.

On the other hand, the absence of restrictions does not guarantee that services will be available. In India and Bangladesh, the overall shortage of medical facilities makes legal abortion and menstrual regulation unavailable to most women. Likewise, despite the relaxation of abortion restrictions in Ghana, and their elimination in Togo, the availability of services has changed little in those African nations. In Zambia, women commonly attempt illegal abortions and then go to a hospital for treatment of complications because few legal abortions can be done under current laws and resource limitations.

From the second half of the century through World War II, abortion was highly restricted almost everywhere. Liberalization of abortion laws occurred in most of the countries of Eastern and Central Europe in the 1950s and in almost all the remaining developed countries during the 1960s and 1970s. A few developing countries also relaxed their restrictions on abortion during the same period, most notably China and India. By mid-1986, abortions could be legally obtained for health reasons in North America and in every European country except Belgium and the Republic of Ireland.

In most countries, safe abortions could be obtained privately from a number of physicians even before the laws were liberalized, and in some, safe services were widely and openly provided. Among the latter countries were Belgium, Greece, Malaysia, the Netherlands, Taiwan and Turkey. In Belgium, for example, abortions were provided through a network of nonhospital clinics as well as in a number of hospitals and physicians' offices.

Since 1986, further liberalization of laws has occurred in 10 countries of one million or more. Most recently, in 1990, Belgium revised restrictions dating from 1867 to permit abortions up to 14 weeks in approved facilities for women "in distress" as a consequence of an unwanted pregnancy. Bulgaria in 1990 and Czechoslovakia in 1986 eliminated requirements that abortions be approved by a committee and be performed for medical or social reasons only; in these countries, no specific justification for early abortion is required. In 1988, the Canadian Supreme Court voided the law allowing abortions only in hospitals and only on medical grounds after committee approval; the House of Commons has passed a new law that would permit abortion if a doctor believes that continuing the pregnancy could threaten the woman's physical, mental or psychological health. Greece revised a restrictive law in 1986 to allow first-trimester procedures without regard to the woman's reasons.

The abortion law in Hungary has been liberalized to permit abortions on request to married women with two living children (reduced from at least three children), and the approval of a committee is no longer needed. As before, abortion is permitted for women who have health, fetal defect or juridical indications, are unmarried, have been separated for at least six months, are older than 35 or have inadequate housing. Women not meeting the above conditions may apply for approval if they have another "social reason" for terminating the pregnancy.

In Malaysia, the law permitting abortion only in cases of life endangerment was broadened in 1989 to allow the procedure when performed by a medical practitioner who is of the opinion that continuing the pregnancy would involve injury to the mental or physical health of the pregnant woman greater than that if the pregnancy were terminated.

First-trimester abortions had been available on request in Romania from 1957 to 1966. Then in 1966, the government imposed severe restrictions on abortion, prohibited the importation of contraceptives and took other measures to encourage population growth; illegal abortions became increasingly common in succeeding years, reaching a higher rate than in any Western European country in which abortion was legal, according to official government statistics. In 1986, Romania renewed measures to suppress abortion and taxed both unmarried persons over age 25 and married couples who remained childless for more than two years without a medical reason.[4] According to press reports, the new Romanian government lifted the 1966 and 1985 restrictions on abortion as of January 1, 1990.[5]

In Vietnam, all reference to abortion was omitted from the criminal law in 1986, although abortion on request was already legal. In addition, the grounds for second-trimester abortions have been broadened in the Soviet Union to include a number of social indications, reportedly to reduce the number of illegal procedures.[6]

In addition to the countries named above, all of which have populations of one million or more, several smaller states have liberalized their abortion laws, including Cape Verde, Cyprus, French Polynesia and Liechtenstein.

One country, Great Britain, is changing its laws in ways that are both more restrictive and more liberal. The new law, which has been passed by the House of Commons but has not yet received final approval, reduces the gestation limit for most abortions from 28 to 24 weeks, formalizing a limit that had been honored in practice since 1985. Abortions to prevent serious or permanent injury to the physical or mental health of a pregnant woman and in cases of fetal abnormality, however, would be permitted beyond the former limit of 28 weeks. In addition, criminal sanctions for violation of the law were removed.

Since 1986, four countries have changed their abortion laws or policies to be more restrictive, although in most cases the changes will have little practical effect. In Chile, where the constitution protects the right to life before birth, a law was approved in 1989 that prohibits abortion without exception, thus eliminating any possibility of legal therapeutic abortion. Similarly, the Philippines adopted a constitution that protects "the life of the mother and the life of the unborn from conception."[7] Japan is in the process of reducing gestation limits from 24 to 22 weeks from the last menstrual period. The change is planned to take effect on March 1, 1991.

In the United States, several states imposed restrictions between 1986 and 1990: Public funding for poor women has been discontinued in one state and in the District of Columbia, leaving such funding available in only 13 of the 50 states; five states have been added to the nine that require parental notification or consent (or, alternatively, a court order) for women under age 18; and abortions have been prohibited in government hospitals and clinics in two states in addition to the two that already had such restrictions. In addition, a Supreme Court decision in 1989 indicated that states might be permitted to impose at least some restrictions that had not previously been permitted.[8] Only one state has yet enacted restrictions under the new decision, but others are considering such legislation. However, even if protection for abortion rights is eliminated from the federal constitution, abortion will remain legal and available in many or most states because of the protection guaranteed under state constitutions or because of decisions made in state legislatures.

Incidence of Abortion

Table 2 shows the abortion numbers, rates and ratios among countries with populations of more than 300,000 for which official statistics could be obtained or for which estimates are available.* Not surprisingly, the most complete and accurate data available are those for developed countries and countries where abortion is legal. The first panel lists countries with data thought to be accurate within 20 percent of the true incidence, as well as a few countries for which there is limited evidence as to accuracy. The data were compiled primarily by government agencies and were obtained either from published reports or from persons with access to official statistics.

The middle panel of Table 2 contains official statistics that are probably low by at least 20 percent because of unreported legal abortions (in Bangladesh, France, the Federal Republic of Germany [West Germany], India, Italy,† Japan, Poland and the Soviet Union) or illegal abortions (in Bangladesh, India and probably the Soviet Union). The figures for Ireland include only those women who obtained an abortion in England and gave an Irish address; the number who gave an English address is unknown. The Romanian data reflect mainly illegal abortions and may either underestimate or overestimate true incidence; they exclude illegal abortions that did not require treatment but may include spontaneous abortions that were treated.

The data in the bottom panel, derived from a variety of sources, may be incomplete. Still, they indicate the magnitude of abortion incidence in a few populous countries and may be more accurate than the official statistics for Bangladesh, Japan and the Soviet Union. The figures for Bangladesh[9] and Spain[10] are derived from surveys of abortion providers and are probably fairly complete for legal procedures, but large numbers of illegal abortions are omitted, especially in the Bangladesh data. The Japanese data[11] are based on calculations of the number of pregnancies expected given the contraceptive use rates; the estimate of 2.3 million is about three times the official reported number for that year. The estimates for South Korea[12] and Turkey[13] are derived from population surveys that asked married women about their histories of legal and illegal abortions. The estimated abortion numbers and rates for these countries are thus conservative, since induced abortions tend to be underreported even in communities where the practice is widely accepted.[14] The estimates for the Soviet Union[15] may also have some downward bias because of underreporting, although the survey on which they are based was conducted only in the Russian Republic, which has a higher official abortion rate than the other Soviet republics. For Switzerland, 54 percent of the data are statistics from cantons that collect data, and the rest are estimates.[16]

Of the countries shown in Table 2, the Soviet Union has the highest abortion rate—112 per 1,000 women aged 15–44, as calculated from official data. That nation's abortion ratio is also high; officially, 55 percent of all known pregnancies are terminated by abortion, but because of illegal abortions and unreported legal abortions, the true rate is probably higher than the official figures indicate.[17] The survey results shown in Table 2 produce an estimate of 181 abortions per 1,000 women of reproductive age, suggesting that a significant proportion of abortions are performed outside the official system. Within the Soviet Union, the republics vary widely in abortion utilization; for example, in 1985, the abortion ratio calculated from official statistics ranged from 66 percent of pregnancies ending in abortion in the Russian Republic to 18 percent in Tadzhik.[18]

Abortion rates and ratios are relatively high in the Eastern and Central European countries as well, where rates range from 27 per 1,000 women of reproductive age in the German Democratic Republic (East Germany) to 71 per 1,000 in Yugoslavia. Except for East Germany, these countries have a history of reliance on abortion, which was legalized in the 1950s before modern contraceptive methods were fully developed. In addition, the full range of modern contraceptive methods is not readily available in most of Eastern and Central Europe and the Soviet Union. In Japan, hormonal methods have been approved for medical purposes (regulating menses) but not for contraception. The Japanese abortion rate may also be relatively high, although it has fallen in recent years and is difficult to estimate.

Abortion rates in most of the remaining developed countries range from 11 to 20 per 1,000 women of reproductive age, although the U.S. rate is higher (27 per 1,000). Italy's rate is also probably well above this range when unreported abortions are taken into account.[19] The rates for the Netherlands, Scotland and Switzerland are below the range found in most developed countries. Those reported for Belgium and Ireland—countries that have very restrictive laws—are also low, but are not significantly lower than the rate for the Netherlands, a country with one of the world's most liberal abortion laws. The low rate reported for Spain, where clinics have just begun to provide services, is based on a survey that might have missed some providers and that excludes illegal abortions.

Abortion rates tend to be higher in those developing countries with liberal abortion laws than in the developed countries, although there is a wide variation in rates. Cuba, South Korea and Turkey have rates of over 40 abortions per 1,000 women of reproductive age. Tunisia, on the other hand, has the relatively low rate of 14 per 1,000, in spite of a liberal law and government-supported services. (The Tunisian statistics, however, omit legal abortions performed in the private sector; in 1980 these were estimated to equal 15–20 percent of the reported abortions.[20])

The rate of menstrual regulation in Bangladesh is relatively low at 12 per 1,000 women of reproductive age because services are unavailable in many rural areas, and in others, women are unaware of existing services. Based on the assumption that one abortion death occurs for every 100 illegal abortions, one study used mortality data to estimate that 780,000 illegal abortions are performed each year.[21] If this estimate is accurate, the illegal abortion rate in Bangladesh is three times the rate of menstrual regulation. Many clandestine abortions are performed in India as well because of a similar lack of medical services in rural areas. India's legal abortion rate is probably two to five times the reported rate of three abortions per 1,000 women, since only a fraction of the legal abortions, mainly those in government hospitals, are reported.

The total abortion rate given in Table 2 represents the number of abortions that 1,000 women could expect to have during their reproductive lifetimes, given present age-specific abortion rates. For example, at present rates of abortion in the United States, 1,000 women would have 797 abortions during their lifetime. Czechoslovakia and Hungary have rates over 1,000, meaning that the average woman in those countries would have more than one abortion during her lifetime. If accurate data were available, total abortion rates would probably be as high or higher in Cuba, Japan, South Korea, the Soviet Union, Turkey and Yugoslavia and perhaps other countries as well.

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*Scotland is included as a separate country because complete, accurate statistics are available and because its utilization of abortion differs from that of England and Wales.

†In Italy and possibly in other countries, the unreported abortions are technically illegal even if performed by a physician, because reporting and other administrative requirements are not met.

Among countries with complete data for a recent three-year period, usually 1984–1987, legal abortion rates have remained relatively stable in most, but significant changes have taken place in some. The largest increase in the legal abortion rate (35 percent) occurred in Czechoslovakia, and much of that may be attributable to the elimination of abortion approval committees. Legal rates also increased by more than 10 percent in England and Wales, New Zealand and Sweden. One source has suggested that the higher Swedish rate may be a result of an increased emphasis on AIDS prevention that has led to a greater use of condoms at the expense of more effective methods.[22]

Declines in abortion rates occurred in Iceland and the Netherlands. The drop in the Netherlands appears to represent a continuing recovery from the pill scare that caused an increase in abortions in 1980. The number of reported abortions in China fell markedly from 14.4 million in 1983 to 8.9 million in 1984, rose again to 11.6 million in 1986 and then fell to 10.4 million in 1987. While there are some reporting uncertainties, the decline in 1984 could be a consequence of a massive increase in the number of sterilizations and IUD insertions in 1983[23] and of a relaxation of the population control effort in 1984.[24] Declines in abortion rates have also been recorded in three countries with less complete data—France, Italy and Japan; although it is possible that the reporting itself has deteriorated in these countries, it seems more likely that the increased acceptance of modern contraceptive methods has caused real declines. Data from surveys in South Korea illustrate the relationship between abortion rates and contraceptive use. Between 1973 and 1979, both the abortion rate and the contraceptive prevalence rate rose rapidly, reflecting the increased desire of couples to reduce their fertility. But from 1979 to 1985, contraceptive prevalence, especially sterilization, continued to increase, and the abortion rate fell back to its level of 1973.[25]

Since the widespread liberalization of abortion laws, illegal abortions have largely disappeared in most developed countries. However, physicians in Italy, Portugal, the Soviet Union and Spain still perform abortions that do not meet all the requirements of the law and, as such, are

Table 2. Number of abortions, abortion rate per 1,000 women aged 15–44, abortion ratio per 100 known pregnancies* and total abortion rate,† by completeness and reliability of data and country

Type of data and country	N‡	Rate	Ratio	Total rate
Statistics believed to be complete				
Australia (1988)	63,200	16.6	20.4	484
Belgium				
In Belgium§ (1985)	10,800	5.1	8.7	u
All** (1985)	15,900	7.5	12.2	u
Bulgaria (1987)	119,900	64.7	50.7	u
Canada				
In Canada (1987)	63,600	10.2	14.7	299
All†† (1985)	74,800	12.1	16.6	u
China (1987)	10,394,500	38.8	31.4	u
Cuba (1986)	155,300	58.0	45.3	u
Czechoslovakia (1987)	156,600	46.7	42.2	1,400
Denmark (1987)	20,800	18.3	27.0	548
England and Wales‡‡ (1987)	156,200	14.2	18.6	413
Finland (1987)	13,000	11.7	18.0	356
German Democratic Republic (1984)	96,200	26.6	29.7	u
Hungary (1987)	84,500	38.2	40.2	1,137
Iceland (1987)	700	12.0	14.0	336
Netherlands ‡‡ (1986)	18,300	5.3	9.0	155
New Zealand (1987)	8,800	11.4	13.6	323
Norway (1987)	15,400	16.8	22.2	493
Scotland §§ (1987)	10,100	9.0	13.2	255
Singapore (1987)	21,200	30.1	32.7	840
Sweden (1987)	34,700	19.8	24.9	600
Tunisia (1988)	23,300	13.6	9.8	u
United States (1988)	1,590,800	27.3	28.8	797*†
Vietnam (1980)	170,600	14.6	8.2	u
Yugoslavia (1984)	358,300	70.5	48.6	u
Statistics that are incomplete				
Bangladesh (menstrual regulation, FY 1989)	77,800	3.4	1.6	u
France*‡ (1987)	161,000	13.3	17.3	406*§
German Federal Republic				
In country (1987)	88,500	6.7	12.1	197
All** (1986)	92,200	7.0	12.8	u
Hong Kong (1987)	17,600	12.7	20.1	u
India (FY 1987)	588,400	3.0	2.2	u
Ireland†* (1987)	3,700	4.8	5.9	139
Israel (1987)	15,500	16.2	13.5	u
Italy (1987)	191,500	15.3	25.7	460
Japan (1987)	497,800	18.6	27.0	564
Poland (1987)	122,600	14.9	16.8	u
Romania†‡ (1983)	421,400	90.9	56.7	u
Soviet Union (1987)	6,818,000	111.9	54.9	u
Estimates based on surveys or other data				
Bangladesh (menstrual regulation, FY 1986)	241,400	12	5	u
Japan (1975)	2,250,000	84	55	u
South Korea (1984)	528,000	53	43	u
Soviet Union (1982)	11,000,000	181	68	u
Spain (1987)	63,900	8	u	u
Switzerland (1984)	13,500	9	15	u
Turkey (1987)	531,400	46	26	u

*Known pregnancies are defined as legal abortions plus live births. Births have not been lagged by six months because the necessary birth data are unavailable for most countries.

†The number of abortions that would be experienced by 1,000 women during their reproductive lifetimes, given present age-specific abortion rates.

‡Rounded to the nearest 100 abortions.

§Abortions performed in 17 hospitals and 20 nonhospital facilities, usually illegally.

**Including abortions obtained in the Netherlands and England.

††Including abortions obtained in Canadian clinics and in the United States. ‡‡Residents only.

§§Including abortions obtained in England. *†1985 data. *‡Provisional data. *§1986 data.

†*Based on Irish residents who obtained abortions in England.

†‡Combining counts of illegal abortions with treated complications and of legal abortions.

Notes: Sources of country data for this table available from author; u=unavailable.

not counted as legal abortions. Moreover, traditional practitioners may still be performing abortions in these countries and in Romania (before 1990) and Yugoslavia because of the persistence of restrictions, legal barriers and local customs.

In developing areas, abortions are commonly performed by both physicians and traditional practitioners whether or not the procedure is legal. In Asian countries such as Bangladesh and Indonesia, physicians provide menstrual regulations while traditional practitioners provide abortions by massage, insertion of objects into the uterus and other folk methods. In Latin America, abortion services are available from physicians in all major cities and in clinics in some areas. In several cities, including, for example, Bogotá and Rio de Janeiro, abortion clinics and physicians advertise in newspapers, without, however, using the word "abortion." Nevertheless, because of the cost of these services and their scarcity outside of major cities, many or most abortions in Latin America are probably self-induced or performed by nonmedical practitioners. Cuba, where abortion is available on request, is a notable exception.

In Africa and parts of the Middle East, the desire for large families is still prevalent, and abortion is thought to be less common than in Latin America, where fertility rates have fallen rapidly. Nevertheless, hospital studies indicate that complications of illegal abortions are a major public health problem. For example, Kenyatta National Hospital in Nairobi, Kenya, treats 50 to 60 women a day for abortion complications.[26] A community-based study in Addis Ababa, Ethiopia, found that 24 percent of all maternal deaths and 54 percent of those directly related to pregnancy were attributable to complications of clandestine abortions.[27]

According to the numbers in Table 2, approximately 22 million legal abortions were reported in 1987 (or the closest year for which data were available for the countries listed). The number of unreported legal abortions can be estimated at six million—most of these accounted for by India, Japan, South Korea and the Soviet Union*—but this estimate is uncertain and could range from four to nine million. The estimated number of legal abortions performed worldwide in 1987 was approximately 28 million, but may have ranged from 26 million to 31 million. These estimates of the numbers of legal abortions are lower than those made in 1986 (33 million, with a range of 30–40 million) because reported abortions in China declined by four million and newly published abortion statistics for the Soviet Union resulted in a decrease in the maximum estimate for that country.

Information on clandestine abortions is too uncertain to determine whether the worldwide total is increasing or decreasing, since few studies in developing countries have provided accurate measures even for small areas. Combining the estimates that other authors have generally used with guesses as to the probable rates of abortion results in rough estimates of clandestine abortions: approximately two million in the Soviet Union, four million each in India and Latin America, 500,000 in Bangladesh, 600,000 in the rest of South Asia, 1.5 million in the rest of Asia, 400,000 for Romania and 1.5 million for Africa. This totals 15 million clandestine abortions, but, again, the uncertainty of the estimates suggests that the number could be as low as 10 million or as high as 22 million. The estimated worldwide total of abortions is therefore between 36 and 53 million, yielding an annual rate of 32–46 abortions per 1,000 women of reproductive age.

Health Issues

The World Health Organization (WHO) has estimated that 99 percent of the 500,000 maternal deaths that occur worldwide annually take place in developing countries; of these, 115,000–204,000 result from complications of illegal abortions performed by unqualified practitioners.[28] A more conservative estimate may be derived from hospital studies that suggest that, on average, 20–25 percent of maternal mortality is attributable to abortion,[29] yielding totals of 100,000–125,000 deaths annually from illegal abortion. The WHO estimates that more than half of the deaths caused by induced abortion occur in South and Southeast Asia; the next largest proportion take place in Sub-Saharan Africa. The numbers are only approximations because of the difficulty in distinguishing between deaths from induced abortion and those from spontaneous abortion in countries where induced abortion is illegal, because of the problems of generalizing from studies done in particular hospitals and localities, and because of the relatively small number of studies that have been reported. A literature review found the highest reported mortality rate to be 2,400 deaths per 100,000 abortions in a rural area of Bangladesh.[30]

The provision of abortion under modern medical conditions has reduced abortion mortality to an extremely low level in developed countries that have legalized the procedure. The aggregate mortality rate of 13 countries for which accurate numbers of deaths and abortions are known is 0.6 deaths per 100,000 legal abortions. The procedure in these countries is now safer than pregnancy and childbirth. During 1981–1985 in the United States, the maternal mortality rate excluding deaths from abortion and ectopic pregnancy was 6.6 deaths per 100,000 live births, a rate that is 11 times that associated with legal abortion.[31]

The possible effects on maternal mortality of the legal restrictions on abortion can be seen in Romania, where most abortions were prohibited in 1966. Between 1965 and 1984, abortion mortality rose from 21 deaths to 128 deaths per 100,000 live births. Over the same period, maternal mortality from other causes fell from 65 deaths to 21 deaths per 100,000 live births.[32] In 1984 alone, the WHO reports that there were 449 abortion deaths in Romania.[33]

The stage of pregnancy at which an abortion is performed affects the risk of mortality and complications; regardless of legal status and medical care, the risk of mortality rises with increasing gestation.[34] In 1981–1985 data for the United States, for example, deaths per 100,000 legal abortions rise from 0.2 at eight or fewer weeks since the last menstrual period to 0.3 at 9–10 weeks, 0.6 at 11–12 weeks, 3.7 at 16–20 weeks and 12.7 at 21 weeks or more.[35]

Most legal abortions are performed relatively early in pregnancy. The proportion performed before nine weeks since the last menstrual period is 40–55 percent in a majority of the 16 countries with data, although the range is from 23 percent in New Zealand to 85 percent in Czechoslovakia. Among countries without legal restrictions on second-trimester abortions, the proportion done after 12 weeks' gestation ranges from four percent in Singapore to 15 percent in India. Few abortions are performed after 20 weeks, the most being 0.9 percent among residents of England and Wales, where women are required to receive authorization for abortion from two physicians. Later abortions are most common among women younger than 20 and among women with little education.

The safest abortion procedure is suction curettage (vacuum aspiration), which is used for the large majority of abortions in industrialized countries. The older method of dilatation and curettage, which requires more cervical dilatation and has more risk of cervical injury, is still commonly used in Hungary and, reportedly, the Soviet Union. In developing countries where abortion is legally restricted, most physicians are not trained in suction curettage and do not have the necessary equipment, so dilatation and curettage is most often used. Early in the second trimester, instrumental evacuation (dilatation and evacuation) has been shown to be safer than instillation procedures[36] and is increasingly being used in the developed countries for procedures up to and beyond 20 weeks. In the United States, 61 percent of abortions past 15 weeks are performed by dilatation and evacuation.

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*In making estimates for the Soviet Union, the difference between the seven million abortions reported and the 11 million estimated to have occurred (see Table 2) was assumed to be due half to unreported legal procedures and half to illegal abortions.

Abortions performed by instrumental evacuation may be provided safely in both hospital and nonhospital facilities.[37] While practices vary widely among countries, the trend in developed countries is toward provision of services outside of hospitals, in clinics and physicians' offices. Similarly, among abortions performed in hospitals, an increasing proportion are outpatient procedures not requiring overnight hospitalization. Leading these trends is the United States, where in 1988 only 10 percent of abortions took place in hospitals and only 1.5 percent involved overnight stays. A majority of abortions are also provided outside of hospitals in the Netherlands (81 percent) West Germany (70 percent), Poland (54 percent, not including unreported abortions performed in physicians' offices) and Norway (51 percent).

Surgical contraceptive sterilization may be safely performed with an abortion. Among the 10 countries with available data, the one with the highest proportion of abortions with concurrent sterilization is India (29 percent in 1982–1983 according to officials statistics). Among the developed countries with data, the proportion ranges from seven percent in Canada to 1.4 percent in the United States, and it may be even lower in certain countries without data, such as some countries of central and eastern Europe, where sterilization is uncommon. The proportions tend to be low in developed countries such as the United States, in part because a high proportion of women having abortions are unmarried or of low parity and want to have children in the future.

Discussion

Much is known about the prevalence of induced abortion and its demographic and health effects in developed countries, where the procedure is generally provided legally in medical settings. In developing countries, however, information is scarce despite the number of people affected. Complications of nonmedical abortions are a major cause of maternal mortality, and their treatment absorbs a large share of the medical resources devoted to obstetrics and gynecology. Abortion rates reflect the extent of unplanned pregnancy and can, therefore, serve as an indicator of the unmet need for family planning services. While new research initiatives on the epidemiology and effects of abortion in developing areas have been undertaken by several international organizations, these efforts will only just begin to fill the information gap.

References

1. R. J. Cook and B. M. Dickens, "International Developments in Abortion Laws: 1977–88," *American Journal of Public Health*, **78**:1305, 1988.

2. Ibid., p. 1307.

3. R. S. Samil, "Commentary on Menstrual Regulation as a Health Service: Challenges in Indonesia," *International Journal of Gynecology & Obstetrics*, Supplement 3, p. 29, 1989.

4. H. P. David, "Romania Ends Compulsory Childbearing," *Population Today*, Mar. 1990, p. 4.

5. G. Lewthwaite, "Ceausescu Hit Hard at Abortion," *The Record*, Hackensack, N.J., Jan. 14, 1990, p. A-37; and M. Dobbs, "Dictator's Dream Took Harsh Toll," *The Washington Post*, Jan. 5, 1990, p. A1.

6. *Abortion Research Notes*, Vol. 17, Nos. 1–2, July 1988, p. 5.

7. Article II, Section 12 of the Philippines constitution.

8. Webster v. Reproductive Health Services, 57 U.S.L.W., No. 88-605, July 3, 1989.

9. R. Amin et al., "Menstrual Regulation Training and Service Programs in Bangladesh: Results from a National Survey," *Studies in Family Planning*, **20**:102, 1989.

10. "Incidencia del Aborto Provocado en España," Federación de Planificación Familiar de España, Madrid, 1989.

11. M. Muramatsu, "Estimation of Induced Abortions, Japan, 1975," *Bulletin of the Institute of Public Health*, **27**:93, 1978.

12. J.-K. Lim, S.-Y. Lee and H.-O. Bae, "Prevalence of Induced Abortion in Korea," *Journal of Population and Health Studies*, Vol. 9, No. 1, July 1989.

13. *1988 Turkish Population and Health Survey*, Hacettepe University Institute of Population Studies, Ankara, 1989.

14. E. F. Jones and J. D. Forrest, "Contraceptive Failure in the United States: Revised Estimates from the 1982 National Survey of Family Growth," *Family Planning Perspectives*, **21**:103, 1989.

15. M. S. Bednii, *Demograficheskie Faktori Zdorovia*, Finansi i Statistika, Moscow, 1984.

16. M. Dondénaz, *Avortement-Interruption de Grossesse: le Cas de la Suisse*, Réalités Sociales, Lausanne, 1987.

17. M. S. Bednii, 1984, op. cit. (see reference 15).

18. Academy of Sciences, State Committee of Labor, *Annual Demographic Report*, Moscow, 1988, p. 319.

19. S. L. Tosi et al., *L'Interruzione voluntaria di gravidanza in Italia, 1983*, Istituto Superiore di Sanità, Rome, 1985.

20. A. Charfeddine, "Evolution Récente du Programme National de Planning Familial," *Revue Tunisienne des Etudes de Population*, **1**:105, 1980.

21. A. R. Measham, M. Obaidullah and M. J. Rosenberg, "Complications from Induced Abortion in Bangladesh Related to Types of Practitioner and Methods, and Impact on Fertility," *Lancet*, **I**:199, 1981.

22. K. Holmgren, "Sweden, an Open Society," *Planned Parenthood in Europe*, Vol. 18, No. 1, 1989, p. 15.

23. Renmin Weishen Chubanshe, *Zhengguo weisheng nianjian 1985*, Beijing, 1985.

24. K. Hardee-Cleaveland and J. Bannister, "Fertility Policy and Implementation in China, 1986–88," *Population and Development Review*, **14**:245, 1988.

25. J.-K. Lim, S.-Y. Lee and H.-O. Bae, 1989, op. cit (see reference 12).

26. F. M. Coeytaux, "Induced Abortion in Sub-Saharan Africa: What We Do and Do Not Know," *Studies in Family Planning*, **19**:186, 1988.

27. B. E. Kwast, R. W. Rochat and W. Kidane-Mariam, "Maternal Mortality in Addis Ababa, Ethiopia," *Studies in Family Planning*, **17**:288, 1986.

28. E. Royston and S. Armstrong, eds., *Preventing Maternal Deaths*, World Health Organization (WHO), Geneva, 1989.

29. L. Liskin, "Complications of Abortion in Developing Countries," *Population Reports*, Series F, No. 7, 1980.

30. A. R. Kahn et al., "Induced Abortion in a Rural Area of Bangladesh," *Studies in Family Planning*, **17**:95, 1986.

31. Special calculations using data on maternal deaths from U.S. National Center for Health Statistics (NCHS), *Vital Statistics of the United States, Volume II, Part A*, 1981 and succeeding years; and NCHS, "Advance Report of Final Natality Statistics, 1985," *Monthly Vital Statistics Report*, Vol. 36, No. 4, Supplement, 1987.

32. E. Royston and S. Armstrong, eds., 1989, op. cit. (see reference 28).

33. WHO, *World Health Statistics Annual 1986*, Geneva, 1986, p. 478.

34. E. Royston and S. Armstrong, eds., 1989, op. cit. (see reference 28).

35. Special tabulations from data on deaths provided by The Centers for Disease Control; and S. K. Henshaw and J. Van Vort, eds., *Abortion Services in the United States, Each State and Metropolitan Area, 1984–1985*, The Alan Guttmacher Institute, New York, 1988, Detailed Table 4, updated to 1985.

36. M. E. Kafrissen et al., "Midtrimester Abortion: Intraamniotic Instillation of Hyperosmolar Urea and Prostaglandin F2a Versus Dilatation and Evacuation," *Journal of the American Medical Association*, **251**:916, 1984.

37. D. A. Grimes et al., "Abortion Facilities and the Risk of Death," *Family Planning Perspectives*, **13**:30, 1981.

Resumen

Durante los últimos cuatro años se ha mantenido la tendencia mundial a la liberalización de las leyes sobre el aborto, que han sido modificadas en 10 países. En otros cuatro, las leyes se han hecho, sin embargo, más restrictivas, pero de forma que ha de afectar a pocas mujeres. El 40 por ciento de la población mundial reside

(Continued on page 76)

Women, Work and Reproduction In Karachi

"The breakdown of kinship ties in urban areas . . . and consequent employment of women in the informal sector do not seem to enhance their relative autonomy in the household or to influence current fertility."

By Zeba A. Sathar and Shahnaz Kazi

Summary

A survey of 1,000 women in Karachi was undertaken to measure the effect of both education and employment on women's fertility and status (their relative autonomy within the family and perceived economic independence). Results show that women's status improves with 10 or more years of education and with employment in professional or other salaried positions outside the home; however, having less than 10 years of schooling and working in low-paying service sector jobs or in income-earning activities at home shows little effect. Employment in professional or higher paying jobs appeared to have more effect than education on lowering women's fertility in the five years prior to the survey.

Introduction

Pakistan continues to experience a substantial population growth rate of 3.1 percent per annum,[1] despite the efforts of its population program during the past 25 years. The lack of any notable change in fertility levels has been attributed to the lack of social change. Because of considerable economic progress, Pakistan now ranks as a middle-level economy; however, social indicators such as infant mortality rates, educational enrollment rates of children, literacy levels and proportion of women in the labor force fail to show similar improvements.[2] The status of women is very low in Pakistan, even within the context of South Asia; compared with men, women have limited access to education, health care and employment opportunities.

However, certain social changes may be underway in major urban areas of Pakistan that are not visible in national statistics.[3] Although official data, known to greatly underestimate women's employment, shows only a limited increase in women's labor force participation during the past two decades, evidence from more intensive studies points to an increase in employment of women in urban areas.[4] Furthermore, women's employment is growing at both ends of the occupational spectrum. For example, women from middle- and higher-income groups have been able to acquire a university education and have assumed professional jobs in fields such as teaching and medicine; these women make up a substantial proportion of professional workers, growing from 15 percent of that category to 18 percent between 1984 and 1989.[5] Other evidence from major urban areas also shows an influx of female workers in the informal sector; some are employed in the service sector as domestic servants, and others have undertaken low-paying jobs at home. Most of these women are illiterate and possess few skills. They belong to the lowest strata of society, and are pushed into employment out of dire economic necessity.

This duality of female employment, also noted in other countries in South Asia,[6] has important implications for women's status as well as for the employment-fertility relationship. Low levels of employment have been cited as a feature of the low status of women in Pakistan, but it is questionable whether employment outside the home necessarily raises women's status either at the societal level or within the household, in terms of having a voice in major decisions. In Pakistan, except for certain approved jobs such as teaching or medicine, employment outside the home may lead to a loss of social status. Status within the household is a function not just of employment but of type of employment.

Arguments about role incompatibility between motherhood and employment and the opportunity costs of giving up employment to bear children apply more aptly to developed societies. In Pakistan, child-care arrangements are so different from those in developed countries, and cultural constraints to women's employment so severe, that other factors are more likely to influence the effects of employment on fertility. Not surprisingly, recent cross-national studies have failed to identify any significant influence of female employment on fertility in most developing countries.[7] Previous national surveys conducted in Pakistan, which divided women by current employment status, have found little or no association between female employment and fertility.[8] However, these studies were constrained by the limited number of employed women, and by the fact that women were not further classified by various types of employment, which may have a qualitatively different impact on fertility. Past data sets lacked any details on household conditions (such as child-care arrangements), pattern of work (such as the stage at which women became employed) and decision-making within the household (such as whether the women were working because of family circumstances or out of individual choice). This article analyzes new data collected for Karachi, to determine whether the current trends in female employment in urban areas are likely to lead to any concomitant changes in status and fertility.

Methods

The present study generated data on both demographic and socioeconomic aspects of households as well as measures of women's status relative to their employment, autonomy in family decision-making, child-care arrangements, employment histories and other factors. The women in our sample were purposively selected to

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enable the study of interrelationships between employment, education, domestic responsibilities, autonomy and fertility. Consequently, working women were oversampled to compensate for the shortage of women employed in different types of occupations as encountered in national samples.

The survey of 1,000 ever-married women between ages 15 and 52 (only two women were older than 50) was conducted from March to May 1987 in Karachi. The sample comprises 680 women who were currently employed for pay and 320 who were not currently working. Because of oversampling techniques, the ratio of working women to nonworking women is more than 2:1 (in a random sample the ratio would be closer to 7:100). All major localities of Karachi were classified into high-, middle- and low-income groups and the sample of nonworking women was divided almost equally across these three strata. Working women were mainly sought out in their place of work: The survey team first identified major occupations in the formal and informal sectors where women were employed and interviewed the women accordingly.

Table 1 shows some of the socioeconomic and demographic characteristics of the women in the sample. Because of almost equal representation of working women in formal and informal sector jobs, the sample contains a much larger proportion of educated women than would have been the case in a probability sample. It also is likely to be biased in favor of high-income households for the same reason. However, efforts were aimed at selecting ample numbers of nonworking and working women from Karachi's squatter settlements where about 35 percent of the city's population lives.[9] The age distribution of women in the localities from which the Karachi Survey sample was drawn corresponds closely with that found for women living in major urban areas by the Pakistan Contraceptive Prevalence Survey, 1984–1985.[10]

Results

The findings from the survey are organized in three parts. The first section examines employment patterns among Karachi women, especially as they relate to household arrangements; the second describes three broad categories of employment and their association with women's relative autonomy in the household; and the third discusses fertility behavior in relation to the above measures.

One of the primary motivations for collecting data in Karachi was to learn more about female work patterns in urban areas. Because of the recognized problem of underenumeration of female work in Pakistan's official statistics,[11] an effort was made to select women in varied types of employment, particularly those working in the informal sector. In addition, female enumerators were asked to ascertain from the female respondents themselves (rather than from male household members) whether they were "doing any work for money or aiding any family member in work," to ensure representation of women who perform paid work in their homes and those in family-based employment.

The sample of working women can effectively be divided into two categories. One group includes women of relatively high socioeconomic status who are employed in the formal sector as professionals or teachers, clerical workers or factory workers. These women entered the labor market with an average of 10 years of education and considerable skill, in pursuit of careers for personal fulfillment or for enhancement of financial security. The other group, from more economically disadvantaged households, generally entered the labor market when they were older and work in low-income occupations in the informal sector (as domestic servants, casual laborers or vendors) and at home (in income-earning activities such as tailoring and embroidery). For the majority of these women, entry into the labor market is not a voluntary or planned decision, but a response to a sudden change in their economic situation, such as the unemployment of the husband, separation, divorce or widowhood.

Table 2 lists the average age, years of schooling and income of women who have ever worked in the formal and informal sectors, compared with those who have never worked. As would be expected, women who work in the formal sector, and their husbands, have educational and income levels considerably higher than those who work in the informal sector. Women employed in the formal sector also marry approximately four years later than those working in the informal sector. Women who have never worked have an educational level somewhere between the other two groups, and an average age at marriage only slightly higher than that of women who work in the informal sector. (Despite having no personal income, the household income reported by these women was, on average, twice that of women working in the formal sector; we believe it is likely that either they were ill-informed about household income or they exaggerated it.)

Table 1. Percentage distribution of ever-married women, by characteristic, Karachi Survey, 1987

Characteristic	%
Age	
<20	1.3
20–24	5.6
25–29	20.4
30–34	19.0
35–39	19.6
40–44	16.5
≥45	17.6
Education	
No schooling	52.0
<Secondary	22.4
≥Secondary	25.6
Monthly household income (in rupees*)	
<1,000	16.1
1,000–1,499	14.5
1,500–1,999	14.4
2,000–3,499	19.7
3,500–4,999	9.5
≥5,000	25.8
Marital status	
Currently married	87.1
Divorced/separated	3.7
Widowed	9.2
Total	100.0

*1,000 rupees = U.S. $45

Regarding patterns of employment, women who have ever worked in the formal sector are much more likely to have worked before marriage. In fact, the majority of these women begin working after the completion of their education and remain employed with few or no interruptions for marriage or births of children. Professionals and teachers, in particular,

Table 2. Average age, education and income of ever-married women and their husbands, by women's work history

Measure	Ever worked		Never worked
	Formal sector (N=374)	Informal sector (N=331)	(N=295)
Age			
Women	35.0	35.5	34.3
Husbands	40.0	42.5	41.3
Women at marriage	21.9	17.8	18.1
Education (in yrs.)			
Women	10.0	1.5	4.7
Husbands	13.2	3.6	8.5
Monthly income (in rupees)			
Respondents	1,921.5	526.0	na
Households	5,320.2	1,870.3	10,419.2

Note: na=not applicable.

Table 3. Percentage of ever-married women, by three measures of autonomy, according to education and employment

Education and employment	N	Family size decisions		Old-age support		Knowledge of contraceptive methods	
		Unadjusted	Adjusted	Unadjusted	Adjusted	Unadjusted	Adjusted
Education (in yrs.)							
0	519	62	63	5	8	87	89
1–9	146	73	75	7	9	88	89
≥10	334	89	85	45	39	95	92
Beta value			0.22		0.36		0.06
F-value			19.52		31.89		1.08
Employment							
Ever worked in formal sector	374	86	80	39	30	96	95
Ever worked in informal sector	331	65	71	4	12	87	88
Never worked	294	63	63	7	9	86	86
Beta value			0.15		0.24		0.13
F-value			10.48		70 35		6.53
R^2			0.09		0.29		0.03

Note: The F statistic is only indicative of significance (when >1.96), because strictly speaking, the statistic applies only in the case of a random sample.

who have considerable upward mobility prospects, tend to avoid breaks in work experience that would hamper their careers and promotions. In contrast, the lower stratum of working women are very unlikely to have worked before marriage. Not surprisingly, they do not have any prior commitment to their work role and enter the labor force after marriage and after the birth of at least one child. Forty-one percent of informal sector workers started working after they had at least four children.

Recent attention in the international literature has been devoted to how women resolve the conflict between domestic responsibilities and employment. In this survey, fewer than 10 percent of currently employed women said that they would give up their jobs if there were an increase in domestic responsibility, and only 23 percent of women who were currently unemployed gave domestic or child-care responsibilities as reasons for not seeking employment. It seems that in Pakistan, women's employment need not interfere with domestic responsibilities. One reason is that child-care surrogates are readily available: Eighty-six percent of women employed in the formal sector and 15 percent of those employed in the informal sector said that relatives looked after their children at home. The most frequent caretakers were the respondents' mothers (29 percent), mothers-in-law (21 percent) and eldest daughters (15 percent). Mothers of the respondents looked after their grandchildren whether or not they were living in the same household. Most of the women in this sample lived in extended family households, where the burden of household work (and child care) may be lightened by other relatives. Seventy percent of women working in the informal sector lived in such households, compared with 53 percent of those in the formal sector. A notable difference between the two categories of working women is that only one percent of those working out of necessity employed servants or other unrelated persons to care for their children, while 14 percent of women working in the formal sector did so. Finally, there is little conflict between child care and employment among women working in the informal sector because the vast majority (84 percent) of these women were involved in income-generating activities that they could do at home.

We also sought to determine whether employment in the formal vs. informal sector is associated with any difference in women's relative status within the household (estimated by their relative autonomy to make important decisions) or in their attitudes regarding fertility and future economic independence. Considering that many of the efforts being made recently to improve women's conditions in Pakistan are through income-generation schemes, it is critical to establish whether employment per se is associated with changes in status (measured by decision-making within the household) or in attitudes closely linked with childbearing. Any relationship between employment and women's status may be mediated by education, since women seeking employment in the formal sector are more likely to have higher levels of education than those in the informal sector or those women currently not in paid employment. It is imperative, therefore, to disentangle the effects of education from those of employment; we will show the effects of education adjusted for those of employment, and vice versa.

The relative impact of employment and education on a woman's autonomy will be assessed in three spheres: decision-making about family size, expectations of support in old age and knowledge of contraceptive methods. In the first case, the binary variable was given a value of one if women thought they should make decisions about family size either on their own or jointly with their husbands, and a value of zero if they thought these decisions should be made by the husband alone or by elders of the household, or if it should be left up to God. The results presented in Table 3 suggest a statistically significant effect of both education and employment on the belief that women should make decisions about family size, either alone or with their husbands. Women with more than 10 years of schooling are much more likely than their less-educated peers to think that women ought to make decisions about family size, either alone or with their husbands. Though the effects of employment are less strong, women working in the formal sector are clearly more likely than those in the informal sector or those who never worked to think that women should participate in such decisions.

Similar results were found regarding women's expectations about who would provide for them in old age. Again, a binary variable was used, with a value of one when women expect to rely on rents, pensions or other income and zero if they expect to rely on children in old age or to leave it up to God. The proportion of women who thought that they could support themselves in old age through pensions, savings and rents was much higher among women with 10 or more years of schooling than among those with less education. However, the difference between those with no education or 1–9 years of schooling was marginal. There was an independent effect of employment on this measure of status as well: After education was controlled for, women engaged in for-

Table 4. Among ever-married women, mean number of children born in five years preceding survey and mean desired family size, by education and type of employment

Education and employment	N	Mean number of recent births*		N	Mean desired family size†	
		Unadjusted	Adjusted		Unadjusted	Adjusted
Education (in yrs.)						
0	493	0.86	0.85	400	5.33	5.14
1–9	133	0.90	0.83	118	5.36	5.31
≥10	285	0.78	0.83	300	3.40	3.68
Beta value			0.01			0.33
F-value			0.06			36.18
Employment						
Formal sector	308	0.61	0.63	295	3.63	4.18
Informal sector	299	0.97	0.97	257	5.42	4.95
Unemployed	304	0.93	0.93	266	4.97	4.82
Beta value			0.16			0.15
F-value			11.49			7.73

*Refers to births in five years preceding survey. Because birth dates were missing for some children, 911 women are included. Employment refers to status at time of survey.

†Includes 818 women who gave numerical responses. Desired family size measured by adding number of additional children women said they wanted to number of living children. Employment refers to ever worked and never worked.

Notes: R^2=0.120 for mean number of recent births and 0.203 for desired family size. The F statistic is only indicative of significance, because strictly speaking, it only applies to random samples.

mal employment were less likely than others to expect to rely on children and traditional sources of support in old age; informal sector employment did not have such an impact on women's perceptions of economic independence.

In the third category presented in Table 3, the dependent variable is unrestricted knowledge of contraceptive methods: It differentiates those women who face no resistance from their husbands or families that might hinder their knowledge of methods or a supply source (assigned a value of one) from those who do face such obstacles (assigned a value of zero). The setting of our survey in Karachi probably accounts for the minor variations among women for this measure. Even so, it is interesting that differences across employment categories exceed those across education; in fact, the effect of education does not appear to be significant. Women in formal sector employment are slightly less likely to face hindrances to knowledge of birth control than women who never worked; although differences between women in informal sector employment and those who never worked are negligible. Employment in the formal sector, which is most often nonfamilial and involves leaving the home, appears to grant women greater mobility and enhanced knowledge about where to seek means of fertility control.

The results show that women's employment in the formal sector does have an impact on relative autonomy in family decision-making and on beliefs about economic independence. The ultimate question is whether paid employment changes women's orientation towards reproduction and fertility choices independent of the effects of education. We used number of children born in the last five years and desired family size as major dependent variables to assess reproductive behavior; age was controlled for as a measure of differing exposure times to childbearing.

Interestingly, the effects of employment on fertility are stronger than the effects of education and they appear to be statistically significant. Table 4 shows that after age and education are controlled for, women who have ever worked in the formal sector have about two-thirds the level of recent fertility (mean number of births in the last five years) of women who ever worked in the informal sector and those who never worked. In contrast, women with 10 or more years of schooling have about the same level of recent fertility as uneducated women. The differential in desired family size, however, is much greater across education groups. Women with 10 or more years of schooling want fewer children than uneducated women do (3.7 vs. 5.1). Smaller differences are seen with regard to employment: Women working in the formal sector say they would like 4.2 children while women in the informal sector desire 4.8 children.

Conclusions

These results, based on the study of a purposive sample of women in Karachi, ought to be viewed as tentative speculations of how women's work in urban areas is likely to influence their relative autonomy and fertility. The recent expansion of urban female employment, which is concentrated in professional occupations in the formal sector as well as in low-paying jobs in the informal sector, has mixed implications for women's status and fertility. Employment opportunities will not necessarily enable women to gain status within their households nor to change their reproductive behavior. Specifically, the breakdown of kinship ties in urban areas (which in the past supported female relatives in situations of divorce, destitution or widowhood) and consequent employment of women in the informal sector do not seem to enhance their relative autonomy in the household or to influence current fertility. In contrast, women who are employed in the formal sector (and are more likely to have a commitment to their careers, more prospects of upward mobility and higher salaries) desire fewer children, have lower current fertility and perceive themselves as more independent.

The majority of women in Pakistan are not currently employed, either because they do not possess the training to get socially acceptable jobs in the formal sector or because they are not compelled by financial hardship to seek jobs in the informal sector. Both the desired and current fertility of these nonworking women are similar to those among women working in the informal sector. Thus, it appears that the prospects for change in women's status and fertility lie not in the expansion of income-generation schemes or in employment per se but in increased opportunities for women in jobs that are valued by society.

References

1. World Bank, "Rapid Population Growth in Pakistan: Concerns and Consequences," Washington, D.C., 1989.

2. Z. A. Sathar, "Possible Reasons for Retardation in Fertility Change in South Asia," paper presented at the Sixth Annual General Meeting of Pakistan Society of Development Economists, Islamabad, Jan. 1990.

3. Z. A. Sathar et al., "Women's Status and Fertility Change in Pakistan," *Population and Development Review*, Vol. 14, No. 3, 1988.

4. Z. A. Sathar and S. Kazi, "Productive and Reproductive Choices of Metropolitan Women: Report of a Survey in Karachi," Pakistan Institute of Development Economics, Islamabad, 1988; and F. Shaheed and K. Mumtaz, "Invisible Workers: Piece Labour Amongst Women in Lahore," Women's Division, Islamabad, 1981.

5. S. Kazi, "Some Measures of the Status of Women in the Course of Development in South Asia," paper presented at the Seminar on Status of Women and their Role in Development, Marga Institute, Colombo, 1989.

6. M. Bhapat and N. Crook, "Duality of Female Em-

(Continued on page 80)

DIGEST

Growing Proportion of Thai Women Now Begin Contraceptive Use to Delay First Marital Birth

A dramatic shift in the initiation of contraceptive use has taken place in Thailand over the past two decades. Most Thai women now begin to practice contraception soon after a first birth, and a growing proportion initiate use soon after marriage to postpone a first pregnancy. Thus, Thailand has reached an advanced stage of fertility transition, and Thai women may be on the way toward achieving full control over marital fertility. These are the main conclusions of an analysis of contraceptive initiation patterns based on data from the 1987 Thailand Demographic and Health Survey (TDHS).[1]

Using questions unique to the TDHS in addition to items from the core questionnaire, the researchers examined patterns of first contraceptive use among the 6,775 married women aged 15–49 in the sample. The additional questions asked when contraception was first practiced, which method was first used and, for the 2,347 women who gave birth within four years of the interview, how soon after the return of menses contraceptive use was either initiated or resumed. Combining these responses with the answers to standard questions on current family size and desired number of children, the researchers were able to infer the stage of family building and thus to speculate on whether an episode of contraceptive use was initiated primarily for the purposes of spacing or for limiting births.

The investigators found that, compared with more recently married women, those married for 20 years or more were more likely both to have never used a contraceptive method and to have initiated use only after exceeding their preferred number of children. For example, 31 percent of women in the older marriage cohort, compared with five percent of those married 10–14 years, started contraceptive use after having had more children then they preferred. Thus, older Thai women, if they used contraceptives at all, initiated use presumably to limit childbearing, while younger women were more likely to begin using a method to space births.

When the analysis is restricted to women with at least two children, the same trend toward earlier initiation of use emerges. Younger marriage cohorts were far more likely to have started contraceptive use earlier—before their first pregnancy or between the births of their first and second child—than were the older marriage cohorts. For example, 20 percent of women married 5–9 years initiated contraceptive use prior to the birth of their first child, compared with just two percent of women married 20–24 years. Furthermore, 37 percent of the more recently married women with two children began use after the birth of their first child, while the proportion among comparable women married for 20–24 years was eight percent.

Even though the majority of women in each marriage cohort had ever used a method, initiating use to postpone a first pregnancy is widespread only among the most recently married women; the proportion of these women steadily decreases with years since marriage. For instance, 42 percent of women married 0–4 years began contraceptive use before their first pregnancy, compared with 26 percent of those married 5–9 years, 13 percent of those married 10–14 years and five percent of those married 15–19 years. Furthermore, among women who used a method prior to a first pregnancy, the interval between marriage and the onset of use was fairly short—81 percent began use within the first two months of marriage.

Pronounced differentials in early first use exist according to rural-urban residence, region and level of educational attainment. Among women in all marriage cohorts, the proportion who began contraceptive use prior to a first pregnancy was higher in urban areas than in rural areas (29 percent vs. 15 percent); highest in the northern region (62 percent) and lowest in the southern region (24 percent); and higher among women with at least a secondary education than among those who completed 0–3 years of schooling (56 percent vs. 31 percent).

Eighty-eight percent of the TDHS sample are Thai-speaking Buddhists. However, there is substantial variation in first contraceptive use both within that majority population and between it and minority groups. Within the Thai-speaking majority, 81 percent of those speaking the northern-Thai dialect who have been married less than five years used a method to delay a first marital birth, compared with 30 percent of comparable women speaking the southern-Thai dialect. Overall, Moslems were much less likely than Buddhists to have started contraceptive use before a first pregnancy (although first use among Moslems also varied by linguistic groups), and Cambodian speakers and members of the hill tribes were the least likely to have used contraceptives to delay a first marital birth.

Among women who initiate use before a first pregnancy, the pill is by far the most commonly used method (73 percent). The pill is also the most popular first method among women who have not yet reached their preferred number of children (56 percent) and among those who have already had all the children they say they want (44 percent). Only in this last category do other methods, namely male and female sterilization, approach the popularity of the pill (30 percent combined).

The researchers applied life-table methodology to analyze trends in contraceptive initiation after childbirth. The findings indicate that Thai women initiate contraceptive use soon after delivery: Among women who gave birth in the four years preceding the survey, one-half began using a method within four months of giving birth. The proportion increases to 72 percent by the end of the first year following delivery and reaches 85 percent by the end of the second year.

In Thailand, female sterilization is most often performed immediately after childbirth, rather than between births. Thus, the 18 percent who chose sterilization necessarily initiated their method use by the first month following a delivery. For other methods, however, use increased with each month elapsed since childbirth and reached 41 percent of women at six months postpartum, 53 percent at one year and 66 percent at two years. Among ethnic groups, the pattern of contraceptive initiation after childbirth closely follows the pattern of use to delay a first marital pregnancy. The Thai-speaking Buddhist majority are the likeliest to initiate use soon after childbirth—nearly two-thirds of these women have done so at six months postpartum, compared with less than one-half of hill tribe women and only one-third of Moslems and Cambodian speakers.

The timing of method use after the return of menses offers a more direct measure of exposure to the risk of pregnancy. Excluding sterilization, nearly one-half of Thai women have already adopted a method one month following the return of menses. When sterilization is included, that proportion rises to almost two-thirds. There is little difference in this measure by urban-rural residence and educational level, especially if the analysis is restricted to the majority population. For example, among Thai-speaking Buddhists, 67 percent of urban women and 68 percent of rural women had initiated use one month after the return of menses. Similarly, the proportion of majority women who initiated use one month after their menses returned was identical among those who had had secondary schooling and those with just 3–6 years of schooling (67–68 percent).

The investigators point to these findings as evidence that "Thailand's reproductive revolution has taken firm hold throughout the core of Thai society." They hypothesize that as societies move toward complete control of marital fertility, a shift occurs so that contraceptive use is initiated first primarily to limit births, then to space births as well, and, finally, use is initiated shortly after marriage to postpone a first pregnancy. Based on their analysis of the TDHS data, the authors conclude that "Thailand is rapidly approaching a stage of full fertility control" as most couples now initiate contraceptive use soon after childbirth and the proportion of women who begin use before a first pregnancy has risen sharply and steadily over the past two decades.—*L. Remez*

Reference

1. J. Knodel and N. Chayovan, "Contraception Initiation Patterns in Thailand," *Health and Population Studies Based on the 1987 Thailand Demographic and Health Survey*, Demographic and Health Surveys Further Analysis Series, Number 1, Institute of Population Studies, Chulalongkorn University, Bangkok, Dec. 1989.

In Sri Lanka, a Majority Of Couples Have Talked About Family Planning

Most Sri Lankan couples have talked about contraceptive use and family size, according to a recent national study, but some groups—older couples, Muslim couples, those with less education and those who live on tea estates—are significantly less likely to have had such discussions.[1] In general, there is agreement between husbands and wives as to whether they have had such discussions, but husbands are somewhat more likely to say that they have been practicing contraception than are their wives.

In 1985, the Sri Lankan Department of Census and Statistics conducted the Sri Lankan Contraceptive Survey (SLCS), a national follow-up to a similar survey performed in 1982. (However, because of political disturbances, only 17 of the nation's 24 districts could be resurveyed.) The 1985 sample consisted of 2,310 currently married women between the ages of 15 and 49 who had participated in the 1982 survey and had remained married over the three intervening years. In addition, the husbands of one in four respondents (577 in all) were interviewed separately.

Among all respondents, 76 percent of the women and 74 percent of the men said they had discussed family planning with their spouse, although less than 10 percent of each said they had done so before their first child was born. "For most couples, therefore," the investigators observe, "family planning communication and the use of contraception appeared to be for the purpose of spacing or limiting births rather than [for delaying] the first pregnancy after marriage." For both the husbands and wives, the proportion who said they had discussed contraception with their spouse was highest among the younger and better educated respondents. In addition, communication was greatest among those who said they wanted no more children. Both urban and rural residents were more likely to report having discussed family planning with their spouse than were those who lived on tea estates. Those with 2–4 children were the most likely to have discussed family planning, while those with no children or with six or more were the least likely to have done so.

All respondents who knew of specific contraceptive methods were asked how and where they had first heard of them. Women were far more likely then men to have heard of male methods from their spouse; for example, about two-thirds of the women said they had heard of withdrawal from their husband, whereas fewer than one-third of the men said they had heard of withdrawal from their wife. On the other hand, husbands were far more likely than wives to say they had heard of such methods as the pill, the IUD, injectables, female sterilization and rhythm from their spouse.

Slightly more than half of the women said they had discussed with their spouse the number of children they wanted to have, and about two-thirds of the husbands said they had done so. The younger and better educated respondents were most likely to report having talked about family size with their spouse.

The investigators then conducted logistic regression analyses of the likelihood that a woman had discussed either contraceptive use or family size with her husband. The analysis revealed that when such factors as age, age at marriage, number of living children, desire for more children, education, area of residence and religion are controlled for simultaneously, the couple's number of living children and area of residence and the woman's education and religion were significantly related to the likelihood that a woman had discussed family planning with her husband. For example, women with 10 or more years of education were almost 2.6 times as likely as those with no schooling to have done so, and urban and rural women were 3.8 and 2.7 times as likely to have done so, respectively, as women who lived on tea estates. Women with 2–3 children were 1.9 times as likely to have discussed family planning with their husband as were those with 0–1 children, and Christian women were 3.1 times as likely as Muslim women to have done so.

Characteristics that had a significant impact on the likelihood that a woman had talked with her husband about the number of children she wanted were current age, number of living children, educa-

DIGEST

tion and area of residence. Education's impact was the most substantial: Compared with women with no schooling, those with 10 or more years of education were 3.5 times as likely to have spoken with their husband about their family-size desires, those with 6–9 years of schooling were 2.4 times as likely and those with 1–5 years of education were 1.5 times as likely. Women 30–39 were about one-third less likely and those 40–49 were nearly two-thirds less likely than 18–29-year-olds to have had such a discussion, and those with four or more children were about half as likely as other women to have done so. Finally, urban and rural women were 3.5 and 2.5 times as likely, respectively, as those who lived on tea estates to have discussed family size with their husband.

A direct comparison of the responses of the 577 husband-wife pairs who were interviewed revealed that about 80 percent of husbands and wives were consistent in their responses to the question about discussion of family planning; however, 11 percent of the time, the husband claimed that he and his wife had discussed family planning but the wife said they had not, while in eight percent of couples, the wife reported that they had and the husband that they had not. With regard to family-size discussions, only two-thirds of the couples replied consistently; in 24 percent of the couples, the husband claimed to have discussed the topic with his wife when the wife said he had not, while in 11 percent the wife claimed to have had such a discussion and the husband said they had not.

Furthermore, only about half of husbands and wives reported the same desired family size; 28 percent of the wives reported wanting more children than their husbands wanted, while 22 percent of the husbands reported wanting more children than their wives did. However, the overall mean desired family size was about the same among husbands and wives (about 3.4 children, on average). When asked how many children their spouse wanted, a majority of the men and women correctly reported their spouse's answer, but wives tended to slightly overestimate their husband's desire for more children while husbands underestimated their wife's desire for more children.

Overall, 69 percent of the women surveyed in the main sample reported that they were practicing contraception. However, a comparison of the responses of the 577 husbands and wives showed that 81 percent of the husbands reported they were currently practicing contraception, compared with only 71 percent of the wives. The men and women were in virtual agreement about their reliance on female sterilization (33 percent each), male sterilization (10 percent and nine percent, respectively), the pill (four percent vs. three percent), the IUD (three percent vs. four percent) and injectables (one percent each), but more husbands than wives reported using periodic abstinence (22 percent vs. 14 percent), withdrawal (15 percent vs. 11 percent) and the condom (seven percent vs. four percent). The investigators hypothesize that some female respondents may have forgotten or may have been too embarrassed to report using a male method, that some women may not have known their husband was practicing rhythm or that husbands may have represented past use of a method as current use.

Finally, the researchers found that among couples using the condom, rhythm or withdrawal (reversible methods that require the involvement of the husband), couples in which the husband and wife replied inconsistently about their fertility desires were more likely than those with consistent responses to have experienced an accidental pregnancy. The difference was not statistically significant, though, possibly because of small sample size.

The investigators conclude that Sri Lankan spouses generally communicate well about family planning, but that some groups—particularly older couples, Muslims, those with little or no education and those living on tea estates—are significantly less likely to talk about family planning. Improving the status of women, increasing the exposure of husbands to information about family planning and enlisting religious leaders' support for family planning are all steps that the investigators suggest could increase spousal communication and improve the practice of family planning.—*M. Klitsch*

Reference

1. T. T. Kane and S. Sivasubramaniam, "Family Planning Communication Between Spouses in Sri Lanka," *Asian and Pacific Population Forum*, 3:1, 1989.

Although Primary Liver Cancer Remains Rare, Pill Use Appears to Increase Risk in Women Under 50

Oral contraceptives may increase the risk of primary liver cancer for young women who otherwise would be expected to be at low risk for the disease, according to a recent study.[1] If the pill does have such an effect, it is probably an initiating one rather than a promoting one because the vast majority of the study subjects with liver cancer had stopped using the pill at least eight years before they were interviewed. Nevertheless, despite the large number of women under age 50 in the United States who have used oral contraceptives at some time and would therefore be expected to be at increased risk of liver cancer, the disease remains very rare in that age-group.

Women with liver cancer were identified as part of a case-control study conducted at 17 hospitals in five U.S. cities* from 1977 through 1985. In that study, nurses trained as interviewers collected medical and reproductive data, including information on timing and duration of oral contraceptive use, from patients with recently diagnosed cancers and from other patients on the medical, surgical and orthopedic wards of the same hospitals. Five percent of all the patients who were approached refused to participate.

Fifteen of the women who were interviewed had been diagnosed with primary liver cancer within the preceding year and had no other primary cancer or history of the disease. Three of them were excluded from the present analysis because they were age 60 or over and thus would have had little or no opportunity to use oral contraceptives. Of the 12 remaining women (all 19–54 years old), nine had hepatocellular cancer, two had cholangiocarcinoma and one had a liver cancer of undetermined type. None had a history of hepatitis, but one woman with hepatocellular cancer was found during surgery to have cirrhosis of the liver.

Controls were selected from among 3,665 interviewed patients who did not have cancer and whose conditions were judged to be unrelated to pill use. Five controls were matched to each cancer patient by hospital location, date of interview and five-year age-group. Because heavy alcohol consumption increases the risk of liver disease, the researchers also compared the drinking habits of cases and controls in the year prior to hospitalization, but found no appreciable difference between the two groups.

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*Baltimore, Boston, New York, Philadelphia and San Francisco.

Eight of nine women with hepatocellular carcinoma had taken oral contraceptives (89 percent), compared with 16 of 45 controls (36 percent). Seven of the nine cases (78 percent) had taken the pill for at least two years, and three had done so for at least five years (33 percent); among the 45 controls, the corresponding proportions were 20 percent and 11 percent, respectively. To calculate the relative risk of hepatocellular cancer, the investigators used conditional logistic regression analyses that controlled for the matching factors—age, year of interview and geographic location of the hospital. The relative risk of hepatocellular cancer, both among women who had used oral contraceptives for 2–4 years and among those who had taken the pill for five or more years, was 20 times the risk among those who had done so for under two years. Among the women who had taken oral contraceptives in the past or were taking them at the time of the study, the median duration of use was 35 months for the cases and 36 months for the controls. Seventy-one percent of users among the cases and 69 percent of those among the controls had stopped taking the pill eight or more years before they were interviewed.

According to the investigators, "the present findings suggest that oral contraceptive use increases the risk of hepatocellular carcinoma." However, these data must be interpreted with caution because of the small number of cases involved. Most of the oral contraceptive users with hepatocellular carcinoma had stopped using the pill years before their diagnosis, which indicates that if the pill does have a carcinogenic effect, it is likely to be an initiating one rather than a promoting one. There was no evidence that pill formulation or duration of use has an effect; furthermore, no inferences could be drawn about the relationship of pill use to type of liver cancer, because only two cases of cholangiocarcinoma were found.

The investigators observe that liver cancer is extremely rare among U.S. women younger than 50, even though many of them have used oral contraceptives at some time; therefore, if there is a causal connection between pill use and liver cancer, "the actual number of cases of liver cancer . . . attributable to oral contraceptives is small." They add that the disease is much more prevalent in other parts of the world, especially where infection with hepatitis B, a major cause of hepatic carcinoma, is common. They conclude, therefore, that these findings "do not have public health importance in the United States and other Western nations."—*F. Althaus*

Reference

1. J. R. Palmer et al., "Oral Contraceptive Use and Liver Cancer," *American Journal of Epidemiology*, **130**:878, 1989.

In Ghana, Most Women Know a Modern Method But Very Few Use One

In Ghana, continuing high levels of fertility reflect early and almost universal marriage and low contraceptive prevalence. On average, a woman will marry at 18.5 years and will have six children before she is 45. Although 23 percent of married women want no more children and 45 percent want to wait at least two years before having another child, only 13 percent are using any method of contraception and just five percent are using a modern method. Polygyny is common, but appears to be declining among younger women. These are some of the highlights of the Ghana Demographic and Health Survey (GDHS), conducted in 1988 among a sample of 4,488 women aged 15–49 and a subsample of 943 co-resident husbands.[1]

The Republic of Ghana, which gained its independence from Great Britain in 1957, is located on the west coast of Africa. The country's last census, in 1984, counted 12.3 million Ghanaians, an increase of 44 percent over the 1970 census total. About two-thirds of the population live in rural areas. The Akans are the largest of Ghana's numerous ethnic and linguistic groups (44 percent); over half the country's people are Christian.

Overall, about 60 percent of Ghanaian women of reproductive age have had some education, with 16 percent attaining some primary schooling, 37 percent attending middle school and eight percent going beyond middle school. Among urban women, 73 percent have had some education, compared with 54 percent among rural women. Levels of education appear to be rising: At the time of the survey, only 19 percent of women aged 15–19 had no education, compared with 74 percent of those aged 45–49.

In general, the husbands in the sample were older and better educated than their wives. Only 17 percent of the husbands were younger than 30, compared with 48 percent of the married women. The husbands were less likely than their wives to be uneducated (38 percent vs. 47 percent) and were more likely to have gone beyond middle school (16 percent vs. six percent).

Nuptiality and Fertility

The median age at first union among Ghanaian women aged 20–49 is 18.3 years. There is some indication that younger women are marrying later: The median for 20–24-year-olds was nearly a year older than that among 45–49-year-olds (18.7 vs. 17.8). The effect of education is particularly striking: The median for women with no education was 17.8 years, compared with 22.3 years for those with higher education.

Almost all Ghanaian women enter some type of union during their reproductive years: In 1988, less than one-half of one percent of women 40–44 years old had never been married.* Overall, 65 percent of women aged 15–49 were legally married, six percent were living in an informal union, three percent had previously been in a consensual union, seven percent were widowed or divorced and 20 percent had never been married.

One-third (33 percent) of the married women interviewed were in a polygynous union. However, the practice of polygyny appears to be declining: Only 16 percent of married women 15–19 years old were in such unions, compared with 43 percent of those 35–39 years old. Rural women were more likely than urban women to be in polygynous unions (34 percent vs. 28 percent); likewise, those with no education were more likely to be in such unions than those with 11 or more years of schooling (40 percent vs. 19 percent). The proportion of women in polygynous unions also varied by area, ranging from 25 percent to 48 percent among the 10 regions of Ghana.

At the time of the survey, 26 percent of the husbands had more than one wife. The proportion of the husbands in a polygynous union rose from 10 percent of those younger than 30 to 39 percent of those aged 50 or older. Moreover, polygyny was three times as prevalent among husbands who were uneducated as among those with higher education; as was the case among the women in the survey, husbands in rural areas were more likely to be in polygynous unions than those in urban areas.

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*In the Ghana DHS, both formal and informal unions are considered marriages.

DIGEST

In 1988, the median age at first birth among women aged 20–49 was 19.6. Urban women were about a year older than rural women when they had their first child (20.3 vs. 19.3). The median age at first birth increased with level of education, from 19.2 among women with no education to 19.9 among those with a middle school education and 23.7 among those with higher education.

The total fertility rate (TFR) for 1985–1988 among women aged 15–44 was 6.1 lifetime births per woman. Urban women had a TFR of 5.1, compared with 6.6 among rural women. Women with no education had a TFR of 6.7, almost double the TFR among women with higher education (3.6). Only 1.6 percent of women aged 40–49 were childless. Comparison with data from the 1979 Ghana Fertility Survey (GFS) suggests that fertility declined only slightly, if at all, in the last decade: The TFR among women aged 15–44 for the five years before the GFS was 6.3 lifetime births per woman, compared with a TFR of 6.1 for the five years preceding the GDHS. The data indicate that any fertility decline that occurred did so during the mid-to-late 1970s, but did not continue into the 1980s.

At the time of the survey, 56 percent of the women who had given birth within the preceding 36 months were breastfeeding their infants. On average, Ghanaian women breastfeed for 20 months and experience postpartum amenorrhea for 14 months. Although the average duration of postpartum sexual abstinence is 14 months, nearly 25 percent of women are still abstaining 20–21 months after giving birth; as a result, the mean period of insusceptibility to pregnancy is 18 months. Rural women breastfeed and observe sexual abstinence for several months longer than urban women; as a result, they are protected from the risk of pregnancy for more than three months longer (18.9 months vs. 15.8 months). Women with higher education breastfeed their infants for a shorter period of time than uneducated women (16 months vs. 23 months), resume sexual intercourse sooner after childbirth (nine months vs. 17 months), experience a shorter period of amenorrhea (nine months vs. 16 months) and are susceptible to the risk of pregnancy much sooner (12 months vs. 21 months).

Contraceptive Knowledge and Use

In 1988, 79 percent of married women knew of a method of birth control (an increase from 69 percent in the 1979 GFS) and 77 percent knew of a modern method. Urban women were much more likely than rural women to know about a modern method (88 percent vs. 71 percent) and to know of a source for that method (82 percent vs. 64 percent). Women with higher education were much more likely than uneducated women to know about a modern method (98 percent vs. 60 percent) and to know where to obtain it (96 percent vs. 52 percent). The pill was the most widely known modern method (64 percent), followed by female sterilization (57 percent), condoms (50 percent), injectables (47 percent), the IUD (40 percent) and vaginal methods (38 percent); only 11 percent of the women knew about male sterilization. The best-known traditional methods were periodic abstinence (41 percent) and withdrawal (33 percent).

Among currently married women, 37 percent had ever used a contraceptive method; 23 percent had used a modern method. Ever-use of any method was lowest among 15–19-year-olds, peaked among 25–44-year-olds and declined among older women, suggesting efforts to space births. The data also indicate a trend toward using birth control to postpone the beginning of childbearing: Only two percent of ever-married women aged 40–44 had used a method before their first pregnancy, compared with 17 percent of those aged 20–24.

At the time of the survey, 13 percent of currently married women were using any method and five percent were using a modern method. Overall, periodic abstinence was the most widely used method (six percent), followed by the pill (1.8 percent), vaginal methods (1.3 percent) and female sterilization (one percent). Condoms, the IUD, withdrawal, injection and other methods were each used by fewer than one percent. Urban women were twice as likely as rural women to use any method (20 percent vs. 10 percent) and to use a modern method (eight percent vs. four percent). Women with higher education were more likely than those with no education to use any method (29 percent vs. nine percent) and to use a modern method (10 percent vs. three percent).

Among the husbands, 79 percent knew of at least one method of contraception; 41 percent had ever used a method and 20 percent were current users. When only modern methods were considered, 76 percent knew of a method, 26 percent had ever used one and nine percent were current users. The most widely known method was the pill (63 percent), followed by condoms (60 percent), female sterilization (58 percent), periodic abstinence (45 percent) and withdrawal (41 percent). The most widely used method was periodic abstinence (nine percent), followed by the pill (four percent), withdrawal (three percent), condoms (two percent), vaginal methods (two percent) and female sterilization (one percent). Modern method use was three times as high among husbands younger than 30 as among those 50 or older (12 percent vs. four percent); likewise, urban husbands were almost twice as likely to use a modern method as rural husbands (14 percent vs. eight percent) and husbands with higher education were more likely to be current users than those with no education (20 percent vs. one percent).

Planned Parenthood clinics, pharmacies and chemical sellers were the major sources of pills, condoms, injectables and vaginal methods, while government hospitals were the most frequently named source for female sterilization and IUDs.

Of all births in the 12 months before the survey, 30 percent were mistimed (wanted, but at a later time) and four percent were unwanted. At the time of the survey, 20 percent of the currently married women wanted a child soon, 45 percent wanted to wait at least two years before their next birth, four percent wanted another child but were not sure when, five percent were not sure if they wanted another child and 23 percent did not want more children; four percent were infecund. Nevertheless, only 20 percent of the nonpregnant women who were not using contraceptives said they intended to use a method in the next 12 months. Most of these women planned to rely on the pill (24 percent), injectables (24 percent), periodic abstinence (10 percent) or female sterilization (seven percent). Of the husbands who were not using a method at the time of the survey, 17 percent intended to use a method in the next 12 months, 14 percent intended to use one later and four percent intended to use one, but were not sure when.

Of the married women and the husbands who knew about a contraceptive method, 74 percent and 77 percent, respectively, approved of family planning. However, fewer than half of the husbands and the wives who knew of a method had discussed family planning with their spouse in the preceding year. Moreover, of the women whose husbands approved of family planning, 18 percent thought their husband disapproved and 23 percent did not know their husband's opinion.

In 1988, the mean ideal number of children among currently married women was 5.5; among all Ghanaian women, it was 5.3. Overall, women in rural areas wanted more children than those in urban areas (5.6 vs. 4.7), and those with no education wanted more children than those with higher education (6.4 vs. 4.0). The ideal family size decreased from 6.5 among women aged 45–49 to 4.7 among those aged 15–19. In general, the husbands wanted more children than their wives: On average, they considered 7.6 children ideal and about 12 percent said it was "up to God." Husbands aged 50 or older wanted four more children, on average, than those under 30. Husbands with no education wanted twice as many children as those with higher education (10.4 vs. 5.2). Only 19 percent wanted no more children.

Maternal and Infant Health

Overall, the mothers of 82 percent of the infants born in the five years preceding the survey had received prenatal care from a doctor or a trained nurse or midwife; during the same period, 70 percent of the births were to mothers who had been vaccinated against tetanus. Forty percent of the births were attended by a doctor or a trained nurse or midwife. There was little difference by age, but women living in urban areas were much more likely than those in rural areas to have been assisted by trained health personnel (70 percent vs. 29 percent). Moreover, women with higher education were much more likely to have been attended by trained health personnel than those with no education (79 percent vs. 26 percent).

Infant and child mortality in Ghana remain high, despite decreases since the mid-1970s: In 1983–1987, 77 of every 1,000 infants died before reaching age one and 155 of every 1,000 children born died before their fifth birthday. The length of the preceding birth interval and mother's education had a strong effect on mortality rates: Mortality among infants born within two years of the mother's previous birth was more than double that among those born after an interval of four or more years (115 vs. 52 deaths per 1,000 births); under-five mortality followed a similar pattern. Likewise, under-five mortality was 75 percent higher among children of uneducated women than among children of women with higher education (175 vs. 100 deaths per 1,000).

In all, 33 percent of the children under age five had health cards; of this group, 97 percent had at least one immunization recorded. In addition, approximately 40 percent of the children without health cards were reported by their mother to have had at least one immunization. Approximately one-third of Ghanaian children aged 3–36 months were chronically malnourished; an additional eight percent were acutely malnourished.—*F. Althaus*

Reference

1. Ghana Statistical Service and Institute for Resource Development/Macro Systems, Inc., *Ghana Demographic and Health Survey, 1988*, Accra, Ghana, and Columbia, Md., Sept. 1989.

Vaginal Ring Is Effective For at Least One Year, Worldwide Trials Show

Clinical trials of the Silastic 382 vaginal ring indicate that it is an effective contraceptive method for at least one year of use.[1] The ring, which releases 20 mcg of levonorgestrel every 24 hours, was tested in 19 centers in 13 countries; 1,005 women participated in the tests. The pregnancy rate with the device in place was 3.7 per 100 women at the end of one year. The one-year discontinuation rate, including loss to follow-up, was 50 percent.

The vaginal ring used in the clinical trials was developed by the World Health Organization as a low-dose progestogen-only device. The ring, which contains a core of 5 mg of levonorgestrel, must be replaced every 90 days. In these trials, conducted from 1980 to 1986, the ring was tested in centers in Africa, Asia, Europe and Latin America.* Women selected for the study were aged 19–34, were menstruating and having intercourse regularly, had proven fertility (either a child or an abortion during their current marriage), had not used injectable or implant contraceptives in the previous three months or oral contraceptives in the previous month, and were able to fill out a menstrual diary card. The women were instructed not to have intercourse without the ring in place and not to remove the ring unless it was likely to be expelled during defecation, in which case it could be removed beforehand and reinserted immediately afterwards. Any expulsion or removal, as well as incidents of bleeding or spotting, were to be recorded in the diary.

A total of 26 pregnancies occurred with the ring in place, for a one-year cumulative pregnancy rate of 3.7 per 100 women. (One pregnancy, after 249 days of ring use, was ectopic; this rate is within the range of copper IUDs and progestogen-only contraceptive.) Pregnancy rates were consistent across regions, except for Africa, where life-table pregnancy rates were twice as high as in other regions (8.2 per 100 women, compared with a range of 2.9–3.8 in Asia, Europe and Latin America). Women had an increased risk of pregnancy with increased body weight, so that those who weighed 40 kg, for example, had an estimated rate of 1.7 compared with 9.8 among those weighing 80 kg.

Six additional pregnancies were attributed to intercourse without the ring in place; in five instances, the ring was removed by the subject, and in one, intercourse took place when the ring had been expelled without the subject's knowledge. Most of the 32 pregnancies ended in induced abortion, but four resulted in live births of normal babies; at the time these infants were conceived, the rings had been in place 5–8 weeks.

At the end of one year, 50 percent of the women originally enrolled in the study were no longer participants. Of these, 19 percent were lost to follow-up, and six percent had become pregnant. The remaining women discontinued use because of menstrual problems (27 percent), other medical reasons, such as vaginal irritation (21 percent), nonmedical reasons, such as desire to become pregnant (15 percent) and expulsion of the ring (11 percent). Discontinuation rates varied widely across regions; China had the lowest rate (32 percent) and Africa the highest (69 percent).

Although 57 women discontinued use because the ring was expelled, expulsion did not necessarily lead to discontinuation, since 243 women experienced a total of 504 expulsions. The majority of expulsions occurred during defecation (57 percent), while others coincided with menstruation (17 percent), urination (12 percent), strenuous activity (five percent) and intercourse (two percent). The odds of expulsion rose with age and parity, so that women who had had three children were almost twice as likely as those who had had only one to expel the device. Most women who expelled the device did so in the first six months: Twenty-three percent of women had done so within that time, compared with 29 percent at one year. The rate of second expulsions was 45 percent within six months of the first expulsion. Women in Asia had almost twice the first expulsion rate of women in the other regions.

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*Women were enrolled in the study from one center each in Brazil, Colombia, Cuba, Pakistan, the Soviet Union, Sweden, Switzerland, Thailand, Tunisia and Zambia, from two centers in England, from three in India and from four in China.

A total of 121 women said they removed the ring at least once, most often because of pain or bleeding (26 subjects) and vaginal irritation or discharge (26 subjects). Other reasons given for removal included wanting to clean the ring, wanting to prevent expulsion during defecation, or simply being curious; less than one percent removed the ring because of discomfort during intercourse. There were low rates of removal in Asia and Africa and high rates in Europe. Removal rates in Latin America varied from center to center.

Menstrual disturbances such as prolonged, heavy or intermenstrual bleeding were the primary bleeding-related reasons women discontinued use. From menstrual diaries provided by 702 participants, the investigators determined that around half of the women in the study experienced changes in their bleeding patterns in each 90-day reference period. Irregular bleeding, experienced by approximately 25 percent of the ring users, was the most common complaint. Another 10 percent had prolonged menstrual cycles and 10 percent had shortened cycles.

The investigators speculate that some of the women who said they were discontinuing ring use to become pregnant might have been dissatisfied users; the menstrual diaries of all but four indicated menstrual disturbances such as prolonged bleeding or spotting episodes. In general, there was no strong correlation between reasons given for discontinuation and what was recorded in the menstrual diaries for the 90-day period prior to discontinuation. However, a trend analysis revealed that women with bleeding patterns differing most from the norm tended to discontinue method use first, and that the most recent bleeding pattern a woman experienced was the strongest factor in her decision whether or not to continue ring use.

The women who discontinued use of the ring because of other medical problems had experienced vaginal irritation, discharge or infection. Two women had what the investigators considered to be adverse reactions that could be related to the progestogen in the ring: One woman became hypertensive after six months of ring use, but her blood pressure returned to normal after discontinuation, and another discontinued after 56 days because of general itching and breast tenderness.

There were 77 discontinuations for nonmedical reasons, with desire to become pregnant the most common, followed by removal of the ring at the partner's request. Other reasons included a wish to change methods, adverse publicity, dissatisfaction and unspecified personal reasons.

The investigators conclude that the contraceptive efficacy and medical safety of the WHO vaginal ring are comparable to other low-dose, progestogen-only contraceptives for at least one year of use. —*R. Turner*

Reference

1. Task Force on Long-Acting Systemic Agents for Fertility Regulation: Special Programme of Research, Development and Research Training in Human Reproduction, World Health Organization, "Microdose Intravaginal Levonorgestrel Contraception: A Multicentre Clinical Trial, I. Contraceptive Efficacy and Side Effects," *Contraception*, 41:105, 1990; ——, "Microdose Intravaginal Levonorgestrel Contraception: A Multicentre Clinical Trial, II. Expulsions and Removals," *Contraception*, 41:125, 1990; ——, "Microdose Intravaginal Levonorgestrel Contraception: A Multicentre Clinical Trial, III. The Relationship Between Pregnancy and Body Weight," *Contraception*, 41:143, 1990; ——, "Microdose Intravaginal Levonorgestrel Contraception: A Multicentre Clinical Trial, IV. Bleeding Patterns," *Contraception*, 41:151, 1990.

Induced Abortion: A World Review, 1990

(Continued from page 65)

hoy en países donde para hacerse un aborto no hace falta justificación determinada, mientras que el 25 por ciento vive donde sólo se permite si corre peligro la vida de la mujer.

Las tasas de aborto legal oscilan entre un máximo de al menos 112 por cada 1.000 mujeres de edad reproductiva en la Unión Soviética y un mínimo de cinco por cada 1.000 en los Países Bajos. Durante los últimos años, las tasas de aborto han venido aumentando en Checoslovaquia, Corea del Sur, Inglaterra y Gales, Nueva Zelandia y Suecia y disminuyendo en China, Francia, Islandia, Italia, el Japón y los Países Bajos.

En los países desarrollados para los cuales existen datos, la mortalidad a consecuencia de abortos legales alcanza un promedio de 0,6 por cada 100.000 intervenciones. Los servicios se prestan cada vez más fuera de los hospitales, y en el caso de las intervenciones realizadas en hospitales, va haciéndose cada vez menos común la internacíon hasta el día siguiente. El curetaje por succión, la dilatacíon y la evacuación—los métodos más seguros—se utilizan cada vez más en países desarrollados pero en algunos de ellos y en ciertas regiones en desarrollo, especialmente donde el aborto está legalmente restringido, no se practican estas técnicas.

Résumé

La tendance mondiale à la libéralisation de la législation sur l'avortement s'est poursuivie au cours de ces quatre dernières années, comme en témoignent les changements enregistrés dans 10 pays. On notera certes un durcissement de la loi dans quatre pays, mais de manière susceptible de n'affecter que peu de femmes seulement. Quarante pour cent de la population du monde vit aujourd'hui dans des pays où l'avortement n'exige aucune justification particulière, et vingt-cinq pour cent dans des pays où la procédure n'est autorisée que dans les cas où la vie de la mère se trouve menacée.

Les taux d'avortement légaux varient entre un maximum d'au moins 112 avortements par 1.000 femmes en âge de procréer en Union Soviétique et un minimum de cinq pour 1.000 aux Pays-Bas. Ces dernières années ont vu les taux d'avortement augmenter en Angleterre et au Pays de Galles, en Corée (Sud), en Nouvelle Zélande, en Suède et en Tchécoslovaquie, tandis qu'ils se réduisaient en Chine, en France, en Islande, en Italie, au Japon et aux Pays-Bas.

Le taux de mortalité par suite d'avortement légal s'élève en moyenne à 0,6 décès par 100.000 procédures dans les pays développés documentés. Les services d'avortement sont de plus en plus organisés hors des hôpitaux, et dans les cas toujours pratiqués en hôpital, les séjours d'une nuit sont de moins en moins fréquents. Curetage par aspiration et dilatation et évacuation, les méthodes d'avortement les plus sûres, sont de plus en plus utilisées dans les pays développés bien que non disponibles dans certaines régions tant développées qu'en voie de développement, surtout lorsque l'avortement est soumis à une législation restrictive.

Books in Review

A Handbook for Family Planning Providers

Contraceptive Technology: International Edition
by Robert A. Hatcher, Deborah Kowal, Felicia Jane Guest, James Trussell, Felicia Hance Stewart, Gary K. Stewart, Sylvia Cerel Bowen and Willard Cates, Jr., Printed Matter, Inc., Atlanta, 1989, $16.00, 460 pp.

Reviewed by Aníbal Faúndes

The title of this book is misleading; it suggests that the authors will restrict themselves to the general description, the mechanism of action and the clinical features of contraceptive methods. Instead, the reader finds a comprehensive reference book on reproductive health, with the widest interpretation of the responsibilities involved in providing family planning services.

The authors begin by providing the reader with a perspective on a number of family planning aims for the beginning of the next century. Among these are improvement in the status of women; better control, prevention and treatment of sexually transmitted diseases, including AIDS; new and more efficient contraceptive and "interceptive" methods; significant reductions in child and maternal mortality; increases in breastfeeding, changes in the way the media portray sex (away from sex linked to violence and toward a positive view of sexuality); greater collaboration of rich nations in helping poorer ones provide appropriate reproductive health services; and, finally, a demographic equilibrium of the world population.

This opening chapter is a good introduction to what the reader will find in the body of the book. Each subsequent chapter presents a compassionate view of people's reproductive health needs, with suggestions on how family planning workers can best prepare themselves to provide better services. The chapter "Health Benefits of Family Planning" is based on an excellent publication from the Center for Population and Family Health, Columbia University; it has been updated where appropriate. The benefits to children and to mothers are illustrated with actual data showing the health improvement that can be achieved by preventing pregnancy in some specific groups of women. It also shows the convenience of linking family planning to maternal and child health services: Women at high reproductive risk are more easily identified, and future pregnancies may be prevented. The chapter also briefly describes how family planning benefits the couple, the family, the economic system and society. Next, there is a brief and interesting look at traditional practices influencing fertility, followed by the best summary on population and family planning that I have ever read.

The authors explain why they have included a chapter on population in a book on contraceptive technology:

> As firm believers in voluntary family planning . . . we do not view contraception, sterilization and abortion for individual couples primarily as a means to reduce population growth. We are interested in helping individuals achieve their reproductive life goals, whatever they may be. Nevertheless, individual reproductive choices do have aggregate consequences, since they determine the fertility of a population. It is only natural that those involved in family planning and reproductive health would be interested in understanding how the uses of contraception and its effectiveness, the prevalence of abortion and the duration of lactation affect the aggregate level of fertility in a population [p. 21].

One consideration missing from this statement is that in less-developed countries, certain socioeconomic factors inhibit the capacity of each individual to achieve his or her reproductive goals. For example, in Brazil, women working as maids cannot have a baby even if they want one, because pregnancy would cause them to lose their jobs and the money to feed themselves and any children they already have.

The chapter has two major attributes. First, the authors explain with great clarity some complicated demographic concepts. The text reads easily, without the mathematical or demographic jargon that makes this kind of article so arid and difficult for the average family planning worker. Second, it provides a well-balanced view of the relationship between family planning and population, and of the everyday effects of population dynamics on the lives of people, while keeping away from the "population explosion" propaganda. For example, the discussion of the effect of the one-child policy in the People's Republic of China on the age structure of the population and on other aspects of society is enlightening, as is the discussion of the ingenious alternative proposal to achieve the same desired demographic result by promoting two-child families, completed later in life.

The chapter "Policies and Laws Related to Reproductive Health" is an excellent reference for all those interested in family planning. However, interpretation of the current legal situation in some countries may differ from that of the authors. For example, most Brazilian lawyers would classify Brazil among "countries that have not clarified the legality of voluntary sterilization," and not among "countries in which voluntary sterilization for family planning purposes alone is illegal."

In addition, I am concerned about this chapter's reference to the IUD as a "postcoital procedure" that covers "the span

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from fertilization to implantation" [p. 71]. The chapter on IUDs partially clarifies this issue, but nevertheless suggests that the "lysis of the blastocyst and/or prevention of implantation" is a mechanism of action [p. 311]. In fact, recent data support the argument that copper IUDs act before fertilization, and that the postfertilization, or implantation-preventing, mechanism is an exception. As is clearly described in the book, both the IUD and the pill can be used postcoitally, but this does not mean that the normal mechanism of action of either method is prevention of implantation. Rather, the immediate endometrial reaction to an IUD insertion, or to the administration of a slightly higher dose of the pill for two days, will prevent implantation of a fertilized ovum in many cases.

In the next two chapters, the authors succeed in providing all the most important practical information on AIDS and other sexually transmitted diseases, updated to late 1988. The chapter on infertility has a very complete review of all the factors affecting reproductive performance, which underscores the role of family planning workers and health professionals in the prevention of infertility. The importance of the choice of contraceptive method in reducing the risk of infertility is clearly explained. However, under surgery, I would have added a caution regarding the newly popularized procedure for removal of ovarian "cysts" and "polycystic ovaries" through partial or total extirpation of basically normal ovarian tissue. It is unfortunate that such a complete book failed to include a discussion of this damaging practice, which is common in developing countries.

The review of the menstrual cycle, its disturbances and the influence of contraceptive methods on it contains some very practical considerations. Among these are suggestions about how to advise patients to reduce their risk of toxic shock syndrome. This is obviously of interest to users of vaginal methods or of methods that may cause increased bleeding.

Although the chapter on pregnancy testing explains what to do in the absence of pregnancy tests (which is the reality in most of the Third World), it is somewhat too technical to be useful in developing countries. On the other hand, the section on counseling a woman who suspects that she is pregnant is among the best examples of the authors' understanding of the patient's need for emotional support, as well as contraceptive technology. The discussion of lactation and contraception during breastfeeding is another example of completeness, clarity and up-to-date information useful to family planning workers.

The part of the book directly related to contraceptive technology opens with a very practical chapter called "Choosing a Contraceptive." Table 12.1, which lists safety concerns, side effects and noncontraceptive benefits of the major methods of contraception, should be used as a reference by every provider of these methods. In addition, the section on factors that influence efficacy should be kept continually in mind by family planning workers.

The following 11 chapters deal with every available contraceptive method, including the new implantable contraceptive, NORPLANT®; biodegradable implants and pellets; injectable microspheres and vaginal rings; and older methods, such as coitus interruptus. All of these chapters constitute a valuable current reference for family planning clinics around the world, and each is practical and complete, without excessive length. For each method there is a clear description of its different varieties, the extent of its use around the world, its advantages and disadvantages, and short- and long-term side effects and complications, as well as clear instructions on how to counsel and care for patients before, during and after the use of the method. In these chapters and throughout the book, the authors emphasize the importance of education and counseling for family planning clients.

I was less pleased with the chapter on abortion, partly because there was no mention of either menstrual regulation or postabortion contraception. Furthermore, although I find most of the information in the book very reliable, I do not agree that the number of abortions in Brazil could be as high as 3 million per year, or that there are 1.2 abortions for every birth. A discussion of current trends in family planning and reproductive health is found in the next chapter. Unfortunately, some of these trends, such as the move toward "high tech/high touch" or "personal provider-user interactions," may be more of a wish than a fact in many developing countries. However, the authors expect a more individualized, caring approach to family planning to become more common throughout the world.

The last five chapters come under the heading "Providing Family Planning Services," and include such topics as approaching the patient, health education, delivery of services and integration with other family health services. These chapters are brief, since all of the issues are dealt with in earlier chapters, but I found the section on principles and practices of adult learning (part of the health education chapter) to be of great practical interest.

The final chapter, "Management Questions Related to the Technology of Fertility Control," constitutes a very useful tool for family planning service providers at the clinic, city or country level. Table 30.2 is an excellent reference for both managers and clinicians, summarizing administrative decisions with respect to many health and management issues, their impact on clients and the recommended practice.

The reader of *Contraceptive Technology* will recognize that it is a volume with a clear line of continuity and unity, but also that almost any of its chapters is complete in itself. The authors have provided a great service by not requiring that the reader of any chapter know the content of the previous one. Thus, the book constitutes an ideal reference for clinics providing family planning and reproductive health services anywhere in the world. It has three main virtues: it is clear, complete and up-to-date (to the end of 1988).

Occasionally, however, the book loses its immediate usefulness for developing countries. Something that will draw the attention of every Third World reader is the emphasis on the use of condoms. I am sure that most of them will ask, as I did, "Okay, but where are the condoms?" The authors' message is well intended, but under current conditions it may cause more frustration than good, since many countries cannot afford to purchase the number of good-quality condoms required, and funding agencies do not have the capacity or the political will to provide condoms to all the countries that need such assistance.

There are a few other instances when the book loses its international perspective, but in general, the availability of *Contraceptive Technology* at reproductive health clinics around the world could make a very favorable impact on training, and could help to accelerate the positive trends that it discusses. However, according to my calculations, there are almost 325 million Spanish-speaking people and about 180 million each of Portuguese- and French-speaking people in the developing world who will not be able to use this English version. The potential benefits of the information contained in this book justify by far the expense of its translation and editing in other languages. The cost-benefit ratio of this would undoubtedly be higher than that of almost any other investment made for the same purposes.

Books in Review

Complex Analyses, Personal Decisions

Choosing a Contraceptive: Method Choice in Asia and the United States
ed. by Rodolfo A. Bulatao, James A. Palmore and Sandra E. Ward, Westview Press, Boulder, Colo., 1990, $38.50, 313 pp.

Reviewed by Barbara Entwisle

Why do couples choose particular contraceptive methods? This question prompted a seminar on the determinants of contraceptive choice, at the East-West Population Institute in August 1985. Consistent with the Institute's regional orientation, seminar papers focused on Asia and, to a lesser extent, on the United States. *Choosing a Contraceptive* contains revised versions of these papers.

As James A. Palmore and Rodolfo A. Bulatao point out in the introductory chapter, Asia provides a highly varied context for investigating method choice. Prevalence ranges from less than 10 percent in Pakistan and Nepal to 70 percent and higher in Hong Kong, Korea, Taiwan and Singapore. Method mix differs across regions as well: Female sterilization, male sterilization, the pill, the IUD and condoms are each the most popular method in at least one Asian country. Even within countries, it is rare to find the majority favoring a single method (China, India and Japan are the exceptions), and it is not unusual to find three or four methods each accounting for 15 percent or more of use. Method mix in Asia has also changed rapidly over time; the predominant trend has been a shift to more effective methods.

The editors divide the book into three sections. The first part provides psychological, social, spatial and economic perspectives on method choice, and gives an overview of selected models for analyzing decision-making, including some not yet applied to research on contraceptive choice and others still under development for this purpose. The second part presents a series of case studies from Bangladesh, India, Korea, Peninsular Malaysia, Sri Lanka and Thailand, and the third examines method choice in the United States. The introductory and concluding chapters review findings and offer organizing frameworks, helping to integrate the diverse material. In addition, the editors combine bibliographic references into a single listing and provide a unified index (all too rare in edited books).

The foreword and introductory chapter state that the volume is intended for policymakers and program managers as well as scholars. Whether the book can satisfy both audiences is open to question, though, since the study of method choice necessarily involves the use of complicated statistical techniques unfamiliar to readers who are not technical specialists. Despite laudable attempts to make results accessible to a general audience—by including sections on predicted probabilities, for example—it seems unlikely that the nonscholarly audience will read more than the introductory and concluding chapters.

Many contributors speak directly to the interests of policymakers and program managers, applying sophisticated but appropriate statistical techniques to questions of definite relevance to them. Several studies examine the effects of specific program strategies; two deserve special praise. In a study of the effects of outreach workers on contraceptive decision-making in rural Bangladesh, James F. Phillips and colleagues found that contact with female outreach workers increases the likelihood that women will use contraceptives more than contact with male workers does; this increase mainly involves methods dispensed in client homes, although the likelihood of sterilization increased as well. Another chapter discusses the sensitivity of users in the Philippines, Jamaica and Thailand to prices of particular contraceptive methods. The investigators in this study, J. Brad Schwartz and coauthors, found that price has a small but negative effect on choice of method (except for condoms). However, the study does not determine the effect of charging for contraceptives previously provided for free—information that is crucial to drawing any conclusions about subsidization.

Three other studies address aspects of the service environment explicitly: a study on the interaction between clinic availability, respondent education and reproductive desires in Peninsular Malaysia; a comparison of travel time to the source of a particular method and to sources of alternative methods in the Philippines and Egypt; and a pilot study of physicians' perceptions of the pill and three variants of the rhythm method in Mauritius, Peru, the Philippines and Sri Lanka. In addition, awareness of government services is included as one of the covariates of method choice in an analysis of Korean contraceptive practices.

Lessons for policymakers and program administrators can, of course, be drawn from studies that do not include a specific policy variable. A good example is the chapter by Ronald R. Rindfuss and associates that examines life cycle, background and current characteristics as predictors of contraceptive choice among white, non-Hispanic women in the United States using National Survey of Family Growth data from 1976 and 1982. One of these authors' most compelling findings was that the change in method-mix between 1976 and 1982, when pill and IUD use dropped dramatically, was not due to compositional changes in the population of contraceptive users but rather may have been the result of adverse publicity concerning medical risks of those methods, a possibility with

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clear policy relevance. Unfortunately, the authors' decision to group methods, distinguishing effective noncoital methods (pill and IUD) from less effective and coitus-related ones, tends to diminish the usefulness of their results for this purpose.

For the most part, contributors to the volume focus on method choice within countries. An exception is the concluding chapter, which tries to account for variation between as well as within countries. To explain why condoms are more popular in Japan (78 percent of all use in 1984) than in any other country, Bulatao points to the reliance of Japanese women on their husbands for contraceptive information (especially early in marriage), the women's purported indifference to sex, the limitations the medical establishment places on obtaining other methods and the availability of abortion as a back-up. These are interesting hypotheses, worth following up. Most contributors consider choices between two or more contraceptive methods, but two chapters do focus on particular methods—one on traditional methods in Sri Lanka and another on sterilization in the United States. The U.S. analysis is problematic in many respects, however, particularly in the questionable application of a computer program for maximum likelihood estimation procedures to a 14-equation system in which many of the dependent variables are dichotomous.

Taken together, the chapters represent an impressive body of work on contraceptive method choice. Certain unresolved issues become evident, some of which are acknowledged: the differences between the sterilization decision and other contraceptive decisions, the problems of selectivity caused by excluding sterilized women from analysis, reasons for omitting fertility intentions from model specifications, the importance of expanding the set of choices to include no contraceptive use and assumptions about decision-making that underlie the analysis of choice.

The book also offers some hints about future research directions. For example, the observation that women make choices about sources as well as methods, and that one may be contingent on the other, is a potentially fruitful subject for study. One contributor hypothesizes that effects of travel time on method choice in Egypt may be explained by the fact that women living close to a source may opt for methods requiring resupply more often, whereas women living farther away from sources choose methods that do not require frequent visits. Expansion of the decision-making model to include both method and source choices seems a worthwhile next step. Mixed multinomial logit models, which consider characteristics of a choice as well as of the individual making that choice, also hold promise, since variation in efficacy, cost, reversibility and potential for side effects undoubtedly affects decisions about particular methods. This approach is illustrated in the analysis of prices and method choice in Jamaica, the Philippines and Thailand. Finally, as appropriate data become available, the study of contraceptive method choice may become part of a broader study of contraceptive use dynamics.

Women, Work and Reproduction . . .

(Continued from page 69)

ployment: Evidence for a Study in Pune," *Economic and Political Weekly*, July 30, 1988.

7. United Nations (UN), "Women's Employment and Fertility: A Comparative Analysis of World Fertility Results," *Population Studies*, No. 96, New York, 1985; and G. Rodriguez and J. Cleland, "Socio-Economic Determinants of Marital Fertility in Twenty Countries," *World Fertility Survey Conference 1980*, Voorburg, Netherlands, 1986.

8. S. Syed, "Female Status and Fertility in Pakistan," *Pakistan Development Review*, Vol. 16, No. 4, 1978; and J. Casterline, "Fertility Differentials in Pakistan," in I. Alam and B. Dineson, eds., *Fertility in Pakistan: A Review of Findings from the Pakistan Fertility Survey*, International Statistical Institute, Voorburg, Netherlands, 1984.

9. UN, "Population Growth and Policies in Mega-Cities: Karachi," New York, 1988.

10. Population Welfare Division, Ministry of Planning and Development, *Pakistan Contraceptive Prevalence Survey*, Islamabad, 1986.

11. UN Statistical Office, "Report on the National Training Workshop on Women and Development in Islamabad," New York, Nov. 1986.

Resumen

Se llevó a cabo una encuesta entre 1.000 mujeres en Karachi para medír los efectos tanto de la educación como del empleo sobre la fecundidad y la posición de la mujer (su autonomía relative dentro de la familia y la manera como se percibe su independencia económica). Los resultados demuestran que mejora la posición de la mujer después de 10 años o más de instrucción o cuando es empleada en un puesto de nivel profesional u otro puesto asalariado fuera del hogar; sin embargo, si tiene menos de 10 años de instrucción o si trabaja en empleos de baja remuneración o en actividades remuneradas dentro del hogar, el efecto es mínimo. Ser empleada en puestos de nivel profesional u otros con remuneración más alta parecía tener mayor efecto que la educación en disminuir la fecundidad de la mujer en los cinco años anteriores a la encuesta.

Résumé

Une étude fut menée sur 1.000 femmes à Karachi pour mesurer l'effet de la scolarité et de l'emploi sur la fécondité et le statut de la femme (son autonomie relative au sein de la famille et son indépendance économique perçue). Les résultats indiquent une amélioration du statut de la femme qui a bénéficié de 10 années au moins de scolarité et qui occupe des fonctions professionnelles ou un poste salarié en dehors du foyer; scolarité de moins de 10 années et emploi dans le secteur des services à bas salaires ou des activités rémunérées à domicile ne produisent toutefois qu'un effet restreint. L'emploi à niveau professionnel ou salarial élevé s'est révélé produire un effet plus grand que la scolarité sur la diminution de la fécondité de la femme pendant les cinq années d'observation antérieure à l'étude.

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